

# Taking up regular drinking in middle age: effect on major coronary heart disease events and mortality

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**Aim:** To examine effects of taking up regular drinking by middle aged non-drinkers and occasional drinkers on major coronary heart disease events and total mortality.

**Methods:** A prospective study of 7735 men from general practices in 24 British towns screened in 1978–80 at age 40–59 years (Q1). Five years after screening, 7157 men then aged 45–64 completed postal questionnaires (Q5) on changes in alcohol intake.

**Results:** In 6503 men without diagnosed coronary heart disease, there were 874 major coronary heart disease events and 1613 total deaths during 16.8 years of follow up after Q5. With stable occasional drinkers as baseline, men who continued to drink regularly had a significantly lower risk of major coronary heart disease events, coronary heart disease mortality, and overall cardiovascular mortality, but a slightly increased risk of non-cardiovascular mortality. New regular drinkers (89% light), even after adjustment for their many advantageous characteristics, showed a lower risk of major coronary heart disease events than stable occasional drinkers (relative risk (RR) = 0.70; 95% confidence interval (CI) 0.48 to 1.03;  $p = 0.07$ ). New drinkers showed no reduction in coronary heart disease or cardiovascular mortality and experienced an increase in risk of non-cardiovascular mortality (RR = 1.40; 95% CI 0.99 to 1.97;  $p = 0.06$ ). In 654 men with diagnosed coronary heart disease, new drinkers experienced no mortality benefit compared with stable occasional drinkers.

**Conclusions:** Middle aged new regular drinkers experienced lower risk of major coronary heart disease events than stable occasional drinkers or non-drinkers, but had increased risk of non-cardiovascular mortality and total mortality. These findings provide little support for encouraging older men who do not drink or who only drink occasionally to take up regular drinking, whether or not they have coronary heart disease.

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It is established that regular light to moderate drinking is associated with a lower risk of major coronary heart disease events,<sup>1–4</sup> although not necessarily with a lower risk of all cause mortality.<sup>3,5</sup> It has been recommended that “in middle and old age some small amount of alcohol within the range of one to four drinks each day reduces the risk of premature death.”<sup>6</sup> However, few studies have examined whether taking up regular drinking in later life confers benefit. In this paper we examine the effect of taking up regular drinking in late middle age on major coronary heart disease events and all cause mortality in a prospective study of British men.

## METHODS

The British Regional Heart Study (BRHS) is a prospective study of cardiovascular disease involving 7735 men aged 40–59 years selected from the age–sex registers of general practices in each of 24 towns in England, Wales, and Scotland and examined in 1978–1980.<sup>7</sup> Men with pre-existing cardiovascular disease or on regular medical treatment were not excluded, and the overall response rate was 78%. Research nurses administered a standard questionnaire (Q1) including questions on smoking, alcohol intake, and medical history. Five years after screening (1983–1985), a postal questionnaire (Q5) was sent to all surviving men, and detailed information was obtained on medical history, changes in smoking and drinking behaviour, and in other risk factors from 7275 men (98% of the survivors).

### Pre-existing disease

At screening (Q1) and five years later (Q5), men were asked whether a doctor had ever told them they had angina or myocardial infarction (heart attack, coronary thrombosis), stroke,

diabetes, and various other disorders. They were also asked about regular medication.

### Self assessment of health

At Q5 only, the men were asked to describe their present health status as “excellent, good, fair, or poor.”

### Men with doctor diagnosed coronary heart disease

This group comprised 654 men with a recall of a doctor diagnosis of coronary heart disease (heart attack or angina) at Q1 or Q5 and those who had suffered a major non-fatal myocardial infarction event before Q5, based on the regular surveillance of general practitioners records, including all hospital reports and correspondence.

### Lifestyle characteristics

#### Smoking

From the combined information at screening and five years later the men were classified as those who had never smoked, ex-smokers at both Q1 and Q5, ex-smokers at Q5 only, and two groups of current cigarette smokers at Q5 (1–19 and > 20/day).

#### Social class

The longest held occupation of each man was recorded at screening, and the men were grouped into one of six social classes: I, II, III non-manual, and III manual, IV, and V. Those whose longest occupation was in the Armed Forces formed a separate group. Current employment status was determined at Q5.

#### Body mass index

At screening weight and height were measured and body mass index (BMI) calculated as weight/height<sup>2</sup> (kg/m<sup>2</sup>). At Q5, the

men recorded their weight and BMI was calculated for each man based on their reported weight and on height measured at initial screening. Obesity is defined as BMI  $\geq$  28 kg/m<sup>2</sup>, the upper fifth of the distribution of BMI in all men at screening.

### Physical activity

At initial screening the men were asked to indicate their usual pattern of physical activity, which included regular walking or cycling, recreational activity, and sporting activity. A physical activity score was derived for each man on the basis of frequency and type of activity, and the men were grouped into six categories based on total score: inactive, occasional, light, moderate, moderately vigorous, and vigorous.<sup>8</sup> "Active" is defined as those reporting at least moderate levels of activity. Information on physical activity was not available at Q5, and adjustment for physical activity is based on physical activity data at screening.

### Classification of alcohol intake

Alcohol consumption was recorded at screening (Q1) and at Q5, using questions on frequency, quantity, and type.<sup>9</sup> This resulted in eight drinking categories: non-drinkers, occasional drinkers (special occasions or one to two drinks a month), weekend drinkers (one to two a day, three to six a day, or more than six drinks a day), and men drinking daily or on most days (one to two, three to six, or more than six drinks a day). The men were then divided into five groups on the basis of their estimated reported weekly intake<sup>10</sup>:

- non-drinkers
- occasional drinkers: < 2 units a month
- light drinkers: weekend, three to six drinks a day; weekdays, one to two drinks a day; 1–15 units/week
- moderate drinkers: weekend, more than six drinks a day; weekdays, three to six drinks a day; 15–42 units/week
- heavy drinkers: more than six drinks a day; > 42 units/week.

Regular drinkers were those reporting light, moderate, or heavy drinking. One UK unit of alcohol (one drink) represents half a pint of beer, a single measure of spirits, or a glass of wine (8–10 g alcohol).

Twenty five biochemical and haematological measurements on a single blood sample taken at Q1 indicated that the reported levels of alcohol consumption were valid on a group basis.<sup>11</sup> Five years later (Q5), men were also asked about past drinking habits. Non-drinkers at Q5 were asked whether they had been drinkers in the past, and if so what their past alcohol consumption had been. Complete information on alcohol consumption at both Q1 and Q5 was obtained from 7157 men. Consumption was classified on the basis of the subjects' reports of their estimated weekly intake<sup>10</sup> at Q1 and Q5.

### Classification of alcohol categories

In men without diagnosed coronary heart disease ( $n = 6503$ ), alcohol categories were classified into six groups as follows:

- Teetotallers: Non-drinkers at Q5 who claimed never to have drunk in the past and who were not regular drinkers at Q1 ( $n = 292$ )
- Ex-drinkers: Non-drinkers at Q5 who reported previous drinking ( $n = 299$ ). Of these men, 25% ( $n = 85$ ) were non-drinkers since baseline.
- Stable occasional: Occasional at Q1 and Q5. Includes 97 non-drinkers at Q1 reporting occasional drinking at Q5 ( $n = 1150$ ).
- New occasional: Regular drinkers at Q1 reporting reduction to occasional drinking at Q5 ( $n = 782$ ).
- New regular drinker: Non-drinkers or occasional drinkers at Q1 reporting regular drinking (89% light) at Q5

( $n = 305$ ). The majority of these men had been occasional drinkers ( $n = 285$ ). We examined new drinking in non-drinkers and occasional drinkers combined because we have previously shown both non-drinkers and occasional drinkers (less than one a month) to have higher risk of major coronary heart disease events and coronary heart disease than regular drinkers.<sup>3, 12</sup>

- Stable regular drinkers: Regular drinkers at Q1 who remained regular drinkers at Q5 ( $n = 3675$ ): at Q5 the distribution was 59% light, 34% moderate, and 7% heavy.

Stable occasional drinkers are used as the reference group in this study, as the non-drinking groups (teetotallers and ex-drinkers) have been shown to be an inappropriate baseline group for studying the effects of alcohol on health and disease.<sup>3, 13, 14</sup>

### Follow up

All men were followed up for total mortality and cardiovascular morbidity from screening in 1978–1980.<sup>15</sup> All deaths and all major coronary heart disease events occurring in the period up to December 2000 were recorded, and follow up was achieved for 99% of the cohort. A major coronary heart disease event includes non-fatal myocardial infarction, fatal myocardial infarction, and sudden cardiac death classified as caused by coronary heart disease. This report is concerned only with the men who completed the fifth year questionnaire (Q5); thus mortality follow up since Q5 is presented, the mean period being 16.8 years (95% confidence interval (CI) 15.5 to 18.0 years). Mortality data were collected through the "tagging" procedures provided by the National Health Service (NHS).<sup>8</sup> Information on non-fatal myocardial infarction was obtained from reports provided by general practitioners, supplemented by regular two yearly reviews of the general practice records and by self reported questionnaires completed by subjects at Q5 and in 1992. A non-fatal myocardial infarct was diagnosed according to World Health Organization criteria.<sup>16</sup>

### Statistical methods

The Cox proportional hazards model was used to assess the independent contributions of alcohol and changes in alcohol intake to the risk of mortality and major coronary heart disease events, and to obtain the relative risks adjusted for age and the other risk factors.<sup>17</sup> Adjustments for risk factors were based on risk factors measured at Q1 and Q5. In the adjustment, age and body mass index were fitted as continuous variables, and physical activity (six levels), smoking (five levels), social class (seven levels), employment status (yes/no), self rated health and recall of stroke (yes/no), and diabetes (yes/no) were fitted as categorical variables.

### RESULTS

During the mean follow up period of 16.8 years in the 6503 men with no history of coronary heart disease, there were 874 major coronary heart disease events (392 non-fatal, 482 fatal; overall rate 9.3/1000 person-years), and 1613 deaths from all causes (707 cardiovascular, 906 non-cardiovascular; overall rate 16.5/1000 person-years). In the 654 men with diagnosed coronary heart disease, there were 375 deaths from all causes (49.0/1000 person-years).

### Characteristics

Table 1 shows the lifestyle characteristics and indicators of ill health in the alcohol groups. Ex-drinkers had overwhelmingly the most adverse lifestyle characteristics. Teetotallers were quite different from ex-drinkers, although they were also more likely to be manual workers. They had far higher prevalence rates of ill health and regular drug treatment than stable occasional drinkers. The new regular drinkers had lifestyle characteristics similar to or better than stable occasional

**Table 1** Mean age and characteristics (%) at initial screening (Q1) or at follow up five years later (Q5) in 6503 men with no diagnosed coronary heart disease, according to alcohol intake group

	TT (292)	Ex (299)	Stable occ (1150)	New occ (782)	New reg (305)	Reg (3675)
Mean age (years)	51.1	51.2	49.7	50.1	49.4	49.6
Manual	64.6	70.8	54.1	56.8	50.8	54.5
Never smoked	43.2	16.1	30.9	25.1	24.5	22.8
Current smoker (Q5)	28.1	40.8	29.9	33.7	30.1	32.6
Unemployed (Q5)	7.9	18.4	8.7	10.4	6.8	8.3
Obese (Q1)	17.5	21.7	15.8	19.4	15.6	18.7
Active (Q1)	38.3	29.6	41.3	38.0	44.0	41.3
Stroke (Q5)	1.4	3.0	1.0	1.0	0.3	1.0
Diabetes (Q5)	3.1	5.0	2.2	3.1	2.3	1.6
Drug treatment (Q5)	32.2	42.8	27.1	29.7	25.7	25.5
"Poor/fair" health (Q5)	21.9	37.1	17.9	20.2	16.0	17.8

Ex, ex-drinker; occ, occasional drinker; reg, regular drinker; TT, teetotaller.

drinkers. They had the highest proportion of non-manual workers, fewer unemployed, fewer obese subjects, were the most physically active of all groups, and had the lowest rate of "poor/fair" health. New occasional drinkers had higher levels of risk factors and poorer self assessed health than stable occasional drinkers. Continuing regular drinkers were similar to stable occasional drinkers but with more current smoking and obesity.

#### Major coronary heart disease events and mortality

New regular drinkers had a lower relative risk of all major coronary heart disease events than stable occasional drinkers (baseline) after full adjustment for lifestyle characteristics and pre-existing disease (marginally significant) (table 2); their coronary heart disease event risk was similar to those who remained regular drinkers. However, after full adjustment they did not show a lower risk of coronary heart disease deaths or cardiovascular disease mortality than stable

occasional drinkers, and had an increase in non-cardiovascular mortality (marginally significant) and an increase in total mortality (non-significant). Continuing regular drinkers had a significantly lower risk of major coronary heart disease events, coronary heart disease deaths, and cardiovascular disease deaths but not of non-cardiovascular disease deaths compared with stable occasional drinkers. New occasional drinkers resembled stable occasional drinkers but had a slightly higher risk of non-cardiovascular disease mortality. Ex-drinkers had a higher age adjusted risk of coronary heart disease events than stable occasional drinkers and teetotallers, but this increased risk was greatly attenuated after adjustment for characteristics and pre-existing ill health; ex-drinkers and teetotallers had the same risk as stable occasional drinkers after full adjustment. Ex-drinkers had the highest age adjusted mortality risk from coronary heart disease, cardiovascular disease, non-cardiovascular disease, and all causes. However, after adjustment for personal

**Table 2** Major coronary heart disease events and mortality by alcohol group in 6503 men with no diagnosed CHD

	TT (292)	95% CI	Ex (299)	95% CI	Stable occ (1150)	New occ (782)	95% CI	New reg (305)	95% CI	Reg (3675)	95% CI
<b>Major CHD</b>											
Cases	49		59		175	115		32		444	
Rate/1000 p-y	12.0		14.9		10.5	10.3		7.1		8.3	
Adj adj RR	1.06	0.77 to 1.45	1.31	0.97 to 1.76	1.00	0.94	0.74 to 1.19	0.70	0.48 to 1.02	0.78	0.66 to 0.93
Adj RR	1.00	0.73 to 1.39	1.02	0.75 to 1.38	1.00	0.90	0.70 to 1.14	0.70	0.48 to 1.03	0.77	0.64 to 0.92
<b>CHD mortality</b>											
Cases	23		46		95	60		22		236	
Rate/1000 p-y	5.3		11.2		5.5	5.2		4.8		4.2	
Age adj RR	0.86	0.55 to 1.36	1.85	1.30 to 2.63	1.00	0.89	0.65 to 1.24	0.93	0.58 to 1.47	0.77	0.61 to 0.98
Adj RR	0.83	0.53 to 1.33	1.32	0.92 to 1.90	1.00	0.85	0.61 to 1.19	1.01	0.63 to 1.61	0.76	0.59 to 0.97
<b>CVD mortality</b>											
Cases	30		66		141	84		34		352	
Rate/1000 p-y	6.9		16.0		8.1	7.2		7.4		6.3	
Age adj RR	0.75	0.51 to 1.12	1.78	1.33 to 2.39	1.00	0.84	0.64 to 1.10	0.97	0.66 to 1.40	0.77	0.64 to 0.94
Adj RR	0.70	0.47 to 1.05	1.27	0.94 to 1.72	1.00	0.80	0.61 to 1.06	1.01	0.69 to 1.48	0.75	0.61 to 0.91
<b>Non-CVD mortality</b>											
Cases	48		49		129	115		44		521	
Rate/1000 p-y	11.1		11.9		7.4	9.9		9.6		9.4	
Age adj RR	1.31	0.94 to 1.83	1.44	1.03 to 2.00	1.00	1.25	0.98 to 1.61	1.37	0.97 to 1.92	1.25	1.03 to 1.51
Adj RR	1.32	0.94 to 1.84	1.06	0.75 to 1.49	1.00	1.19	0.92 to 1.54	1.40	0.99 to 1.97	1.18	0.97 to 1.44
<b>Total mortality</b>											
Cases	78		115		270	199		78		873	
Rate/1000 p-y	18.0		27.9		15.5	17.1		17.0		15.7	
Age adj RR	1.02	0.79 to 1.31	1.62	1.30 to 2.00	1.00	1.04	0.86 to 1.25	1.16	0.90 to 1.49	1.00	0.87 to 1.15
Adj RR	0.99	0.77 to 1.28	1.18	0.94 to 1.48	1.00	0.99	0.82 to 1.20	1.20	0.93 to 1.55	0.96	0.83 to 1.10

Rates/1000 person-years and adjusted relative risks using stable occasional drinkers as baseline. Relative risk adjusted for age, social class, smoking, body mass index, physical activity, employment status, pre-existing stroke, diabetes, regular drug treatment, and self assessed health status. CHD, coronary heart disease; CI, confidence interval; CVD, cardiovascular disease; ex, ex-drinker; occ, occasional drinker; p-y, person-years; reg, regular drinker; RR, relative risk; TT, teetotaller.

**Table 3** Mortality in 654 men with diagnosed coronary heart disease by alcohol group

	TT (43)	95% CI	Ex (59)	95% CI	Stable occ (112)	New occ (87)	95% CI	New reg (37)	95% CI	Reg (316)	95% CI
<b>CHD mortality</b>											
Cases	17		22		31	27		12		106	
Rate/1000 p-y	34.0		37.1		22.8	26.0		29.6		28.3	
Adjusted RR	1.71	0.92 to 3.15	1.56	0.89 to 2.73	1.00	1.05	0.62 to 1.79	1.19	0.60 to 2.34	1.33	0.88 to 2.00
<b>CVD mortality</b>											
Cases	21		26		38	33		16		129	
Rate/1000 p-y	42.0		43.8		27.9	31.8		39.4		34.4	
Adjusted RR	1.62	0.93 to 2.82	1.49	0.89 to 2.49	1.00	1.07	0.66 to 1.74	1.30	0.72 to 2.37	1.33	0.92 to 1.93
<b>Total mortality</b>											
Cases	28		39		57	46		23		182	
Rate/1000 p-y	56.0		65.7		41.9	44.3		56.7		48.6	
Adjusted RR	1.31	0.82 to 2.10	1.46	0.96 to 2.22	1.00	1.00	0.67 to 1.51	1.23	0.75 to 2.04	1.25	0.92 to 1.69

Relative risk adjusted for age, social class, smoking, BMI, physical activity, employment status, pre-existing stroke, diabetes, regular drug treatment, and self assessed health status.

CHD, coronary heart disease; CI, confidence interval; CVD, cardiovascular disease; ex, ex-drinker; occ, occasional drinker; p-y, person-years; reg, regular drinker; RR, relative risk; TT, teetotaller.

characteristics and indicators of ill health, the increased risks were greatly attenuated and the mortality differences were no longer significant in comparison with stable occasional drinkers.

#### Men with diagnosed coronary heart disease

Although the numbers were small, among men with a diagnosis of coronary heart disease the teetotallers and ex-drinkers had an increased adjusted risk of mortality from coronary heart disease and cardiovascular disease compared with stable occasional drinkers (table 3). The new regular drinkers showed no benefit for coronary heart disease mortality, and some increase (non-significant) in cardiovascular and total mortality was observed compared with stable occasional drinkers. At Q5 the men with coronary heart disease had high rates of current smoking (66%), obesity (28%), regular medicine use (73%), and "poor/fair" health status (60%), as well as low levels of physical activity (24% at Q1). Teetotallers with coronary heart disease were the least physically active (12%), had higher than average current smoking rates for men with coronary heart disease (72%), and included twice the percentage of men with a low body weight (BMI < 22 kg/m<sup>2</sup>), both at Q1 and Q5, compared with all men with coronary heart disease. The latter feature has been shown to be associated with increased mortality in this cohort.<sup>18</sup> New occasional drinkers did not differ from stable occasional drinkers. Regular drinkers had increased mortality risks compared with stable occasional drinkers, but adjusted risks were slightly lower than in teetotallers or ex-drinkers.

## DISCUSSION

Most prospective studies have focused on the differences in morbidity and mortality between current non-drinkers and regular drinkers. In these studies, regular drinkers consistently show a lower risk of coronary heart disease events than non-drinkers or occasional drinkers, even after adjustment for potential confounding variables. The considerable evidence that light to moderate drinking is beneficial for coronary heart disease has led some to suggest that regular alcohol intake (one to two drinks a day) should be actively encouraged.<sup>19, 20</sup> However, the reasons for an individual not drinking may be related to ill health or to social and cultural determinants, and few prospective studies have examined the effects on the subsequent risk of major coronary heart disease events and mortality of taking up regular drinking in middle age by men who have been used to drinking occasionally or not at all.

#### Coronary heart disease events and mortality

In this study, non-drinkers or occasional drinkers who took up regular drinking (89% light) showed the same benefit for major coronary heart disease events as continuing regular drinkers. They had a marginally significantly lower risk of coronary heart disease events than stable occasional drinkers and a lower risk than lifelong teetotallers or ex-drinkers. But in contrast to the continuing drinkers, they showed no benefit for coronary heart disease or cardiovascular disease mortality. Thus, although the risk of heart attack is lower in these men, they do not appear to have protection against fatal heart attacks. In addition, the new drinkers showed an increased risk of non-cardiovascular mortality (marginally significant) compared with stable occasional drinkers. However, as the vast majority of these men had become light drinkers (1–15 units/week), it seems unlikely that this increased risk is alcohol related.

#### Men with diagnosed coronary heart disease

In a recent report on men in this cohort with diagnosed coronary heart disease, based on alcohol intake at Q5 and followed up for 12.8 years, regular light alcohol intake (1–14 units/week) was not associated with any significant benefit or deleterious effect on coronary heart disease, cardiovascular disease, or total mortality.<sup>14</sup> In the present study, new regular drinkers (predominantly light) with coronary heart disease did not show any benefit for any cause of mortality compared with stable occasional drinkers, although these men were at much higher absolute risk than men without diagnosed coronary heart disease. Teetotallers with diagnosed coronary heart disease showed increased risk of coronary heart disease and cardiovascular disease mortality compared with stable occasional drinkers. Teetotallers with no diagnosed coronary heart disease were not at increased risk. In men with no diagnosed coronary heart disease, teetotallers showed similar characteristics to stable occasional drinkers and had low rates of current smoking (28%) compared to those with diagnosed coronary heart disease (72%). Overall, teetotallers with diagnosed coronary heart disease had highly adverse characteristics compared with other men with coronary heart disease. They had very high rates of smoking and unemployment, the lowest level of physical activity, and by far the highest proportion of men with a low body mass index, which has been associated in this cohort with increased mortality, reflecting smoking and ill health.<sup>18</sup> The increased risk in these teetotallers with coronary heart disease is more likely to be caused by their multiple adverse lifestyle characteristics and the severity of their pre-existing ill health than by a lack of alcohol.

### Previous studies

Two other major prospective studies have examined changes in alcohol intake and subsequent risk of morbidity and mortality, although neither was specifically concerned with the effects of taking up regular drinking.<sup>20 21</sup> Our findings are similar to those observed among the middle aged population in the Honolulu heart study of Japanese American men.<sup>21</sup> An examination of changes in drinking behaviour over six years showed that abstainers who became light or moderate drinkers had a significant reduction in risk of major coronary heart disease events but little reduction in total mortality. They also showed increased risk of cancer events. In the Alameda County study, male non-drinkers who became light or moderate drinkers had a lower risk of total mortality (non-significant) than continuing light drinkers, but a slightly higher coronary heart disease mortality, as in continuing non-drinkers.<sup>22</sup> These findings are broadly similar to our own findings, in which taking up regular drinking appeared to confer benefit on coronary heart disease events but no benefit on coronary heart disease mortality. We have examined taking up regular drinking in non-drinkers and occasional drinkers combined, as very few non-drinkers took up regular drinking and because the non-drinkers and occasional drinkers have been shown to have similar risks of major coronary heart disease events and coronary heart disease mortality.<sup>3 14</sup> There is little evidence that taking up regular drinking in later life confers benefit overall, and indeed it may increase the risk of cancer and other non-cardiovascular deaths. Although the alcohol intake classifications are based on reported intakes, the finding of lower risk of major coronary heart disease events among regular drinkers in this study is consistent with the established association between light to moderate drinking and major coronary heart disease events, and supports the validity of the present study.

### Public health aspects

Some experts recommend that light drinking should be included in the advice given to individuals for reducing the risk of coronary heart disease.<sup>23 24</sup> A recent review considers that "the weight of current evidence appears now to be that those at high risk for heart disease...should be invited to consider taking one or two drinks most evenings with food."<sup>25</sup> However, a current statement based on an international symposium on the effects of light and moderate drinking on cardiovascular disease concluded that "non-drinkers should not generally be encouraged to start drinking."<sup>26</sup> Two reviews evaluating whether regular alcohol intake should be promoted for health reasons agreed that this would be inappropriate because of ethical considerations and lack of evidence of benefit and the possibility of harm.<sup>27 28</sup> It appears that "public health authorities are in almost universal agreement that people should not be encouraged to drink for their health."<sup>29</sup>

### Conclusions

Although non-drinkers and occasional drinkers who took up regular drinking in middle age subsequently experienced reduced risk of major coronary heart disease events compared with those who remained non-drinkers or occasional drinkers, these men showed no benefit for mortality from coronary heart disease or cardiovascular disease and also experienced an increased risk of non-cardiovascular mortality and all cause mortality. Men with diagnosed coronary heart disease who took up regular drinking showed no benefit for any form of mortality compared with those who remained occasional drinkers. Our findings do not provide unconditional support for encouraging older men who do not drink or who only drink occasionally to take up regular drinking, whether or not they have coronary heart disease.

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