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Summary of research

Key words: Sex, lifestyle, coronary disease, stroke

1a: Most of the burden of cardiovascular diseases (CVD) is explained by a composite of physiological and lifestyle factors - chiefly, elevated blood pressure, obesity, diabetes, cigarette smoking, poor diet, and physical inactivity. There is increasing evidence that some of these risk factors have stronger effects on CVD in women than men. Although preventive strategies aimed at lowering the burden of these risk factors will benefit all, a sound knowledge of whether there are meaningful sex differences in relationships between traditional chronic disease risk factors and disease outcomes should help promote development of effective, sex-specific interventions.

1b: Addressing sex differences in relationships between risk factors and CVD risk is of importance from clinical and public health perspectives. Identifying significant sex differences in how risk factors relate to CVD risk should provide

an impetus for targeted interventions aimed at reducing the prevalence of disease. Moreover, sex-specific estimates of disease risks associated with modifiable risk factors are essential for accurate estimation of the burden of disease due to these factors. These findings would help to inform the decision making process to maximize the efficacy of the allocation of health care resources, both in the UK and worldwide.

1c: Sex-specific estimates for the association between common lifestyle risk factors (elevated blood pressure, obesity, diabetes, cigarette smoking and a poor diet) and the risk of incident CVD will be determined. These sex-specific estimates will be used to evaluate whether or not the risk of stroke and coronary disease associated with these risk factors is similar between women and men. Analyses will be conducted in all individuals, as well as in subgroups defined by age, so as to identify sex-specific changes with ageing (for example, post-menopause), and socioeconomic status, to explore the effects of deprivation.

1d: Baseline and follow-up data on the full cohort of women and men in the UK Biobank, except those with pre-existing CVD at baseline, are requested.

Project extension:

We request the genetic data to allow us to conduct sex-specific Mendelian randomisation analyses. These MR analyses would enable us to clarify whether any possible differences between men and women in the relationship between risk factors and disease outcomes are likely to be causal or whether they are underpinned by sex differences in the prevention, diagnosis, management, or/and treatment of diseases. All variables in the genomics category (100314) are requested because we would need to build genetic instruments for a range of different exposures.