

PSC (Prospective Studies Collaboration)

Collaborative meta-analysis of 61 prospective studies of vascular risk factors (blood cholesterol, blood pressure, body mass index, diabetes) and cause-specific mortality. One million individuals in 61 prospective studies

Background and aims

The Prospective Studies Collaboration is a collaborative meta-analysis combining data from existing prospective observational studies that recorded both blood pressure and blood cholesterol at baseline and that followed participants for cause-specific mortality. Investigators from around the world have collaborated to combine data from 61 existing prospective studies involving a total of more than one million participants from Europe, North America, Australia, Israel, China and Japan. During 13 million person-years of follow-up there were 120 000 deaths including 55 000 vascular deaths (34 000 ischaemic heart disease, 12 000 stroke, 10 000 other vascular).

The aim of the Prospective Studies Collaboration is to establish statistically reliable estimates of the effects of established risk factors (particularly blood pressure and cholesterol, but also body mass index and diabetes) on the risks of dying from specific vascular diseases in different circumstances (eg, at different ages, and at different levels of other risk factors).

Body Mass Index and cause-specific mortality

Press release: [Moderate obesity takes years off life expectancy, though not as many as smoking](#) (PDF) (18 March 2009)

Blood cholesterol and vascular death by age, sex and blood pressure

This report shows that for ischaemic heart disease mortality:

- Total cholesterol is a major risk factor both in middle and in old age
- There is no threshold level of total cholesterol in the range commonly occurring in Western populations below which lower cholesterol is not associated with lower risk
- There are no important sex differences in the relative effects of total cholesterol on risk
- The joint effects of total cholesterol and blood pressure are approximately additive (rather than multiplicative)
- The joint effects of HDL and non-HDL cholesterol are approximately independent and additive
- HDL cholesterol adds worthwhile predictive information beyond either total or non-HDL cholesterol, and the ratio of total/HDL cholesterol is statistically twice as informative as total cholesterol alone

For stroke mortality:

- Total cholesterol is weakly positively associated with ischaemic and total stroke mortality in early middle age (40-59 years), but this could be largely or wholly accounted for by the association of cholesterol with blood pressure
- Total cholesterol was negatively associated with haemorrhagic and total stroke mortality at older ages (70-89 years) and, particularly for those with higher systolic blood pressure (eg, over about 145 mmHg)
- There is conclusive evidence from randomised trials that statins substantially reduce not only coronary event rates but also stroke rates in patients with a wide range of ages and blood pressures. The absence of an independent positive association of cholesterol with stroke mortality, especially at older ages and higher blood pressures, in this study is unexplained and invites further research.

Press release: [Higher cholesterol raises ischaemic heart disease mortality but is not independently connected to stroke mortality](#) (30 November 2007)

Blood pressure and vascular death by age and sex

This report shows that:

- Blood pressure is a major risk factor for ischaemic heart disease, stroke and other vascular causes of death both in middle and in old age, with about a halving in risk for every 20 mm Hg lower usual systolic (or 10 mm Hg lower diastolic) blood pressure
- There is no threshold level of blood pressure, at least down to 115/75 mmHg (ie, within the range commonly occurring in Western populations), below which lower blood pressure is not associated with lower vascular mortality
- There are no important sex differences in the relative effects of blood pressure on vascular mortality
- The effects of blood pressure on ischaemic and haemorrhagic stroke mortality are similar
- Systolic blood pressure is more informative than diastolic blood pressure, but their average is even more informative. Their difference (ie, pulse pressure) is much less informative.

Press release: [Further evidence for benefits of lower blood pressure in middle and old age](#) (13 December 2002)

Funding

The Prospective Studies Collaboration is currently supported by the UK Medical Research Council, and was previously supported by the British Heart Foundation and European Union (EU BIOMED).

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