Modelling public policy & health care interventions to address inequalities in cardiovascular disease

**Project Leads:** Simon Capewell $^1$ and Peter Diggle$^2$  **Collaborators:** Martin O’Flaherty $^1$ (modelling); & Margaret Whitehead$^1$ (policy evaluation)

1. Division of Public Health & Policy, University of Liverpool, Liverpool, UK;  2. Lancaster University

---

**Background**

- Coronary heart disease (CHD) represents the biggest single cause of death in the UK
- CHD is currently the biggest contributor to inequalities in premature deaths
- CHD is eminently preventable, but many preventive interventions aimed at changing behaviours fail to reduce inequalities, and some may even widen them
- With UCL colleagues, we have developed & validated the IMPACTsec Policy Model. This can examine English mortality trends by quintile of socio-economic circumstance (SEC), and to quantify contributions from specific risk factors & treatments.

**Objectives**

Using CHD as a case-study, we will:

- Identify, characterise and interpret published data on the effectiveness and differential socio-economic impact of environmental interventions on CHD prevention
- Identify and access relevant data describing socio demographic trends in population CHD risk factors & effectiveness and differential impact of CHD therapies;
- Explore modelling methodologies to:
  - quantify and describe the contribution of environmental and health care interventions on recent CHD mortality change by socio demographic group, and
  - predict likely impact of future policies & interventions;
- Disseminate outputs in a form suitable for commissioners.

**Research question**

Can we extend and build on the IMPACTsec model to evaluate and predict the effects of past and future environmental and health care interventions, in order to inform local priority-setting and evidence-based commissioning?

**Methods**

- Systematic literature review:
  - Review policies on tobacco control, diet & inactivity
- Consult expert advisory group
- Model impact of past and future environmental and health care interventions.

**Deliverables**

- After scoping a variety of simulation methodologies, we will quantify contributions of past and future interventions to changing risk-factors for CHD, stratified by socio-economic quintiles.
- Quantification of the precision and uncertainties associated with past estimates and future projections.
- Evidence-based recommendations to public health and care commissioners with regard to priority-setting, evidence-based commissioning & addressing inequalities.

**References**


2. 1'care commissioners with regard to priority-setting, evidence-based commissioning & addressing inequalities.