

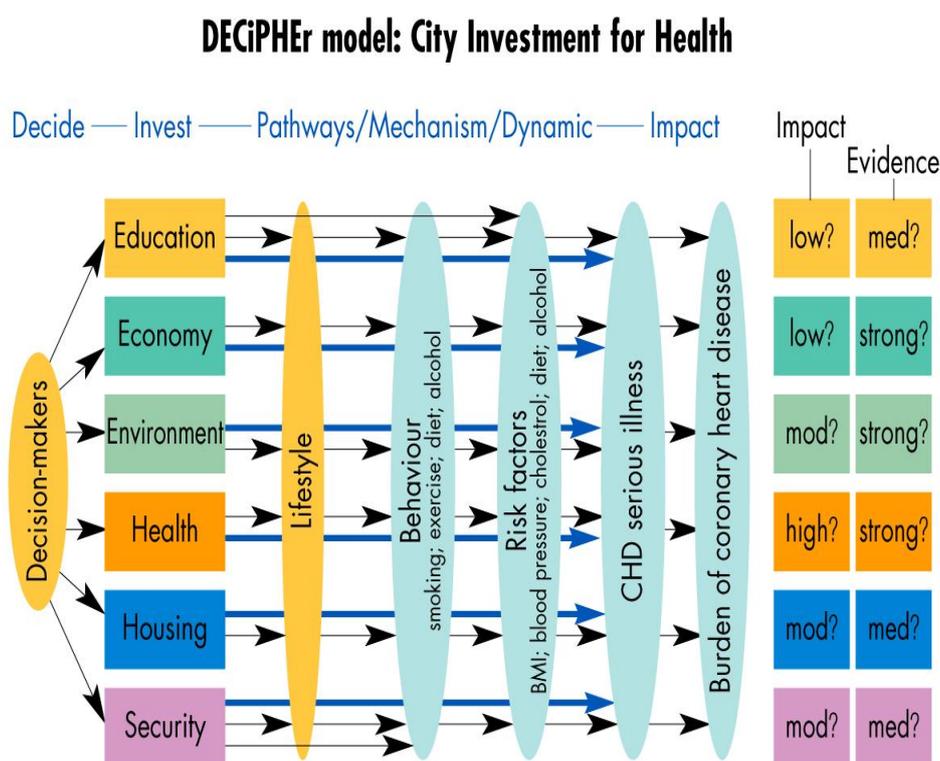
DECiPHER

Distal Interventions by Municipal partnerships to reduce risk of Cardiovascular Disease in city populations

Introduction

The DECiPHER model/framework linking distal to proximal determinants was developed in the first year of the project and is summarised schematically in figure 1. We assume municipal investment in any one of six domains initiates mechanisms reducing proximal risk factors for CVD. However city decision-makers require a more precise focus on feasible interventions within each domain. They need to know what actions, projects, programmes or policies will have the most impact on reducing CVD risk. The task of the DECiPHER partners is to identify practical interventions and the task of the SHU DECiPHER team is to provide and assess the evidence of impact.

Figure 1.



Intervention Options

Options for municipal interventions in each of five domains (health was excluded pro tem) were developed at partner meetings in Udine and Turku. The annexed schedule is an expanded version following discussion at the 4th partner meeting in Helsingborg. Partners agreed the desirability of a longer list of up to 30 interventions from which each municipality could select a shortlist most appropriate to local circumstances. For example, retrofitting thermal efficiency measures in their housing stock is not a priority for the two Scandinavian partner cities which already maintain high standards.

Challenges

Calculating impact is challenging; for four reasons.

- *First*, most change mechanisms linking distal and proximal determinants in each domain are not fully comprehended. For example, do interventions to enhance an identified green city park actually increase its use for walking and does it displace activity elsewhere.
- *Second*, evidence supporting each link in the causal chain is of variable quality. For example, walking and exercise are intimately connected and there is compelling medical evidence linking exercise to body mass index and other CVD risk factors. Yet there is limited evidence on the first link in the chain, on the efficacy of interventions to improve the walkability of a city environment.
- *Third*, though the potential pool of beneficiaries in each domain can be identified – for example the number of city commuters to work or school– most interventions will impact on only a fraction and we cannot be certain which demographic will benefit. For example will investment in an integrated cycle network result in higher than average uptake of cycling by those with a high BMI and most at risk of CVD.
- *Fourth* and finally, when will the investment have an impact? There is compelling scientific evidence that living in cold conditions raises the risk of death from CVD within two days, whereas the lifestyle of school children will increase the burden of heart disease 30-50 years later.

Calculus

The annexed schedule of interventions gives our best estimate of impacts on CVD risk factors.

1. The potential pool of beneficiaries is expressed as a fraction of the city population. Everyone benefits from a warm and comfortable house but only the working age population can benefit from cycling to work.
2. Column 2 gives a realistic target for extra beneficiaries from initial intervention measures. The baseline will vary from city to city. For example extra measures to enhance cycle networks might aim to increase the model split of cycling to work commuters from 0.9% to 5.9% in Sheffield and from 26% to 31% in Helsingborg.
3. An earlier DECiPHER report compiled by partners is utilised to estimate the degree of municipal influence on intervention/investment decisions, acknowledging the role of central governments and market forces.
4. Column 4 identifies which specific proximal determinants will be affected by the intervention. Further work will distinguish lifestyle activity (exercise) from risk factors (BMI).
5. Column 5 grades how confident we are that the intervention will have an impact based on scientific evidence referenced in column 7.
6. Column 6 contains very preliminary estimates the cost-effectiveness of interventions, some of which may target health outcomes whereas for others (urban regeneration) health is a subsidiary product.

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