

INTRODUCTION

Major studies have found that people with diabetes have an increased risk of developing cardiovascular disease (CVD) and lower life expectancy following a CVD-related event. The aim of this analysis was to apply the UK Prospective Diabetes Study (UKPDS) coronary heart disease (CHD) risk engine to the North West Adelaide Health Study (NWAHS) population with diabetes, and to examine the effects of modelling changes in A1c, systolic blood pressure, total cholesterol, and smoking status on the proportion of people with diabetes at risk of developing CHD within 10 years of diagnosis of diabetes.

METHODS

The NWAHS used a representative population sample of adults living in the north western region of Adelaide to examine the prevalence of chronic conditions, including diabetes. All households within this region with a telephone connected and the telephone number listed in the Electronic White Pages were eligible for selection. Within each household, the person who had their birthday last and was aged 18 years or older, was selected for interview and invited to attend the Study clinic. Of those who were interviewed, n=4060 attended the clinic, resulting in a clinic participation rate of 69%.

People with diabetes were defined as those who reported having been told by a doctor, or who were diagnosed in the clinic with a fasting plasma glucose reading of at least 7.0 mmol/L. Those with diagnosed and undiagnosed diabetes, who were aged 25 to 65 years and who did not self-report having coronary heart disease (CHD), including heart attack and angina, were included in this analysis (n=158).

Box 1. Calculation of risk for CHD among those with Type 2 diabetes.

The risk engine formula was calculated as follows:

$$R(t) = 1 - \exp\{-q[(1-dt)/(1-d)]\},$$

where R=risk, t = time, d = risk ratio for duration of diagnosed diabetes, and q = the product of the risk ratios for:

- Age at diagnosis;
- Sex;
- Ethnicity;
- Smoking;
- HbA1c;
- Blood pressure; and
- Lipids.

Note: The risk ratio for ethnicity was set at 1.00 as the ethnic backgrounds in the original model were not relevant to this population.

RESULTS

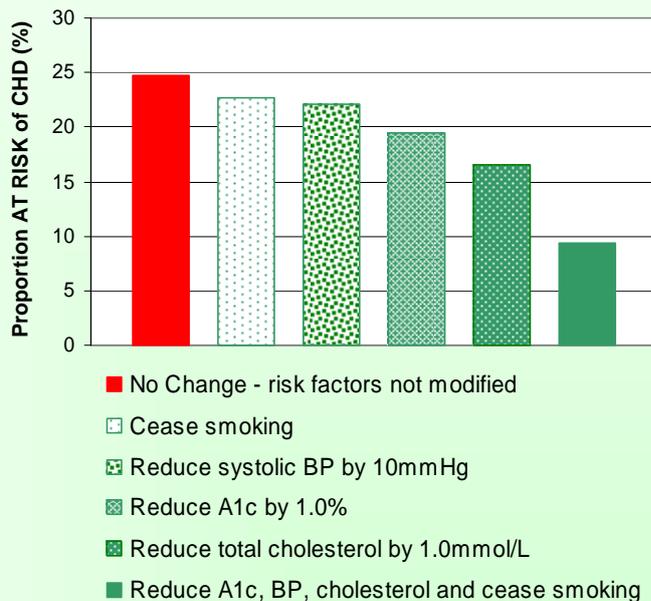
Risk of CHD

The mean (SD) percentage risk of CHD within 10 years of diagnosis was 11.4% (8.1). Those 'at risk' of CHD were classified as having at least a 15% risk within 10 years of diagnosis of diabetes, based on the recommendations in the Diabetes Management for General Practice Guidelines 2005/6.

Effect of reducing risk factors on risk of CHD

Figure 1 shows the proportion of those classified as being at risk of CHD within 10 years of diabetes diagnosis according to various interventions, including no change (in management targets), reducing A1c by 1.0%, reducing systolic blood pressure by 10mmHg, reducing total cholesterol by 1.0mmol/L, and cessation of smoking, as well as combining all four of these into a single intervention.

Figure 1: Proportion of those AT RISK of CHD within 10 years of diabetes diagnosis, when different interventions are modelled



In the 'no change' model, that is no change in diabetes management targets, 24.8% are at risk of CHD within the next 10 years. When smoking is ceased and systolic blood pressure, A1c, and total cholesterol are reduced, the proportion of those at risk of CHD within 10 years drops to 22.7%, 22.1%, 19.4%, and 16.6% respectively. When all four of these interventions are combined, the proportion at risk drops from 24.8% to 9.4%.

CONCLUSIONS

Reducing key diabetes management targets, particularly total cholesterol, among those who are classified as 'at risk' could significantly reduce the proportion of those at risk of CHD within 10 years of diagnosis of diabetes.