

Estimations of the Clinical Benefit of Optimal Blood Glucose, Blood Pressure and Lipid Control in Type 2 Diabetic Patients with the Metabolic Syndrome

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Background and Aims: Appropriate management of multiple coronary heart disease (CHD) risk factors is known to reduce CHD events in general populations. Our objective is to estimate the proportion of CHD events potentially averted with appropriate management of particular risk factors in a sample of newly diagnosed type 2 diabetic patients with the metabolic syndrome (MetS). **Material and Methods:** The study sample was derived from 4,293 subjects enrolled in ADOPT, a randomized, double-blind study comparing the durability of glucose lowering and preservation of pancreatic beta-cell function of rosiglitazone compared to metformin or glyburide/glibenclamide in patients with drug-naive, recently diagnosed type 2 diabetes mellitus. Patients aged 30-74 years, with the MetS as defined by the National Cholesterol Education Program - Third Adult Treatment Panel were included in the analysis. Baseline risk factor data and Framingham risk score were used to estimate the risk of developing CHD (angina pectoris, myocardial infarction, coronary insufficiency and coronary heart disease death) within a ten-year period. We then estimated CHD events preventable by modelling the benefit of achieving optimal glycemic, blood pressure and lipid control in newly diagnosed type 2 diabetic patients with MetS. **Results:** 1,573 men and 1,371 women 30 to 45 years old among the study participants exhibited MetS and had information on Framingham risk factors. Three hundred and thirty eight participants with the MetS who were missing information on the Framingham risk factors were excluded. Applying Framingham risk estimates to this population, 290 (18.4%) men and 204 (14.9%) women will experience CHD events over the next decade. Incremental benefit was expressed as the estimated number of CHD events averted due to control of the following risk factors: 1) HbA1C to < 7% (assumes control to 'non-diabetic' status) 2) blood pressure (BP) to <130mmHg systolic and <85 mmHg diastolic, 3) HDL-cholesterol to ≥ 45 mg/dl in men and ≥ 50 mg/dl in women, and 4) LDL-cholesterol <100 mg/dl. The number and proportion of CHD events averted is displayed in the table below:

| Risk Factor (s) Controlled | No. of CHD events averted in men (%) | No. of CHD events averted in women (%) | No. of CHD events averted Total (%) |
|--|--------------------------------------|--|-------------------------------------|
| A. Normal HbA1C | 101 (34.8 %) | 93 (45.6%) | 194 (39.3%) |
| B. BP <130 mmHg systolic and <85 mmHg diastolic | 76 (26.2 %) | 31 (15.2%) | 107 (21.7%) |
| C. HDL-C ≥ 45 mg/dl in men and ≥ 50 mg/dl in women | 42 (14.4 %) | 29 (14.2%) | 71 (14.3%) |
| D. LDL-C to <100 mg/dl | 120 (41.4 %) | 52 (25.5%) | 172 (34.8%) |
| E. A + B + C | 175 (60.3 %) | 126 (61.7%) | 301 (60.9 %) |
| F. A + B + C + D | 224 (77.2 %) | 148 (72.5%) | 372 (75.3%) |

Our analysis suggests that up to seventy five percent of CHD events may be preventable with aggressive management of CHD in this sample of newly diagnosed type 2 diabetic patients with the metabolic syndrome.