

Estimating the potential risk reduction of type 2 diabetes mellitus (T2DM) complications if systolic blood pressure (SBP) targets were to be lowered

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#### Aims

Recent trial evidence assessing the advantages of targeting a SBP level lower than 140mmHg suggests benefits may occur in people without diabetes to 120mmHg, but not in individuals with T2DM. To investigate this discord, we simulated the potential benefits of lowering SBP targets in a T2DM population.

#### Methods

We used the UKPDS Outcomes-Model v2 to estimate 10-year event rates for T2DM complications: myocardial infarction (MI), stroke, blindness, amputation, and all-cause mortality. We used baseline data from 5,717 T2DM participants in the Trial Evaluating Cardiovascular Outcomes with Sitagliptin Study. Risk factor values were held constant over 10 years in 5 simulations, each with a different allocated cohort SBP level between 160 and 120mmHg. Cumulative relative risk reductions (cRRR) at each 10mmHg decrement were compared using Kruskal-Wallis tests.

#### Results

Patients were mean age 66years, HbA1c 7.3%, LDL-cholesterol 2.3mmol/l, HDL-cholesterol 1.12mmol/l, median T2DM duration 9.8years, with 28.3% women, 66.6% White ethnicity and 52.7% with history of smoking. From a 160mmHg baseline, imposing SBP levels of 150mmHg, 140mmHg, 130mmHg and 120mmHg produced cRRRs of 2.2%, 4.5%, 7.0%, & 10.0% for MI; 12.5%, 24.8%, 35.6%, & 44.9% for stroke; 5.4%, 10.9%, 16.2%, & 20.9% for blindness; 7.4%, 14.7%, 21.6%, & 27.4% for amputation; 1.4%, 2.8%, 4.1% & 5.2% for all cause mortality, respectively ( $p < 0.001$  in all cases).

#### Conclusions

These simulated outcomes provide guidance on the potential benefit of targeting progressively lower SBP values from a baseline of 160mmHg to 120mmHg. Benefits may continue at lower levels, but should be balanced against possible adverse hypotensive effects.