Additive effects of glycaemia and blood pressure exposure on risk of complications in type 2 diabetes: a prospective observational study (UKPDS 75).

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AIMS/**HYPOTHESIS:** The relative importance of glucose and blood pressure control in type 2 diabetes remains uncertain. We assessed interactive effects of glycaemia and systolic blood pressure (SBP) exposure on the risk of diabetic complications over time. SUBJECTS, **MATERIALS AND METHODS:** HbA(1c) and SBP, measured annually for a median of 10.4 years in 4,320 newly diagnosed type 2 diabetic patients from the UK Prospective Diabetes Study (UKPDS), were categorised as updated mean values <6.0, 6.0-6.9, 7.0-7.9 or > or =8.0%, and <130, 130-139, 140-149 or > or =150 mmHg, respectively. Clinical outcomes were UKPDS predefined composite endpoints. **RESULTS:** The incidence of the "any diabetes-related endpoint" in the lowest (HbA(1c) <6.0%, SBP <130 mmHg) and highest (HbA(1c) > or =8%, SBP > or =150 mmHg) category combinations was 15 and 82 per 1,000 person-years, respectively, and 24 and 120 per 1,000 person-years in a Poisson model adjusted to white Caucasian male sex, age 50 to 54 years and diabetes duration of 7.5 to 12.5 years. Updated mean HbA(1c) and SBP effects were additive in an adjusted proportional hazards model with risk reductions of 21% per 1% HbA(1c) decrement and 11% per 10 mmHg SBP decrement. Endpoint rates obtained in the 887 patients randomised in both the glycaemia and hypertension intervention trial arms were consistent with the observational data. Those allocated to both intensive glucose and tight blood pressure control policies had fewer events than those allocated to either policy alone or to neither (p for trend 0.024). CONCLUSIONS/**INTERPRETATION:** Risk of complications in type 2 diabetes is associated independently and additively with hyperglycaemia and hypertension. Intensive treatment of both these risk factors is required to minimise the incidence of complications.