BACKGROUND AND OBJECTIVE: In conjunction with the introduction of disease management programmes in Germany there is an ongoing scientific debate on the desirable goals for HbA1c in the management of patients with type 2 diabetes mellitus.

PATIENTS AND METHODS: In this study, a novel computer-based simulation model (diabetes mellitus model = DMM) was used to estimate the consequences of different levels of metabolic control as assessed by HbA1c for the development of short- and long-term complications of this disease. RESULTS: At a mean difference of 1 % the rate of severe hypoglycaemic events over 10 years was by 32-84 % higher in those with a lower HbA1c. In contrast, the incidence of microvascular complications (proliferative retinopathy, end-stage kidney disease, clinical neuropathy) was by 20-33 % lower in the group with the lower as compared to the higher HbA1c level according to the scenario applied. The rates of myocardial infarction and stroke were reduced by 15-20 % under these conditions.

CONCLUSIONS: This model calculation suggests that a more strict metabolic control in patients with type 2 diabetes mellitus results in a greater reduction of microvascular complications than of macrovascular complications, but is associated with a higher rate of hypoglycaemic...
episodes. The diabetes mellitus model is a non-expensive alternative to simulate clinically relevant
questions on the management of type 2 diabetes and to provide rapid and realistic answers.