Diabetes Management

Our expert highlights the most important research articles across the spectrum of topics relevant to the field of diabetes management

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Yusuf S, Rangarajan S, Teo K *et al.* Cardiovascular risk and events in 17 low-, middle-, and high-income countries. *N. Engl. J. Med.* 371(9), 818–827 (2014).

After increasing from the 1930s to the 1950s, cardiovascular disease rates and case fatality in high-income countries have declined markedly. These changes have been attributed both to reductions in risk factors and improved disease management and health care access. In contrast, cardiovascular disease rates in many low- and middle-income countries have increased in recent decades. The Prospective Urban Rural Epidemiologic (PURE) study was initiated in 2003 to compare the incidence of cardiovascular disease and the frequency of cardiovascular risk factors across a range of countries with different income levels. Major cardiovascular end points were collected in 156,000 study participants who were followed over an average period of 4 years. Cardiovascular risk scores were computed based on smoking, diabetes, high blood pressure, family history of heart disease, abdominal obesity, psychosocial factors, diet, and physical activity. Cardiovascular risk scores were lowest in the low-income countries, intermediate in the middle-income countries, and highest in the high-income countries. However, despite having the highest risk factor scores, the highest income countries had the lowest cardiovascular event rates (and lowest case–fatality rates), followed by intermediate rates in the middle-income countries, with the highest cardiovascular event rates in the lowest income countries. These findings highlight the importance of influences other than conventional risk factors on incidence of cardiovascular disease and case fatality. Such influences likely include access to care, improved diagnosis and treatment, and higher education in the high-income countries.

Zoungas S, Chalmers J, Neal B *et al.* Follow-up of blood-pressure lowering and glucose control in Type 2 diabetes. *N. Engl. J. Med.* doi:10.1056/NEJMoa1407963 (2014) (Epub ahead of print).

Long-term follow-up of patients with diabetes enrolled in intervention trials has generally shown modest beneficial effects of intensive glucose control, but not blood pressure control, on a range of outcomes. However, these trials have generally included patients with young-onset Type 1 diabetes or newly diagnosed Type 2 diabetes. In contrast, the Action in Diabetes and Vascular Disease: Preterax and Diamicron Modified Release Controlled Evaluation (ADVANCE) trial was designed to test the effects of routine blood pressure lowering and intensive glucose control across a broad cross-section of patients aged 55 years and older with Type 2 diabetes. The trial included 11,140 subjects randomized to blood pressure lowering (by routine administration of a single-pill combination dose of perindopril and indapamide) or placebo, and to intensive or standard glucose control for a period of 4.4 years. This study by Zoungas reports on the follow-up of nearly 8500 of these subjects at 6 years following the end of the trial. The primary end points were all-cause mortality and major macrovascular events. By the time of the first post-trial visit, there were no longer any differences between the intervention groups in

Future Medicine part of fsg

terms of blood pressure (mean between-group blood pressure difference = 5.6/2.2 mmHg during the randomized ADVANCE trial) or glycated hemoglobin levels (mean between-group glycated hemoglobin levels = 0.67% during the randomized ADVANCE trial). However, subjects randomized to blood pressure lowering experienced a modest, but significant, reduction in death from all causes and death from cardiovascular causes compared with subjects receiving placebo. In contrast, there was no significant difference in risk of total death or death from major macrovascular events in the intensive glucose control group compared with the standard glucose control group. Those randomized to intensive glucose did experience significantly lower risk of end-stage renal disease. In conclusion, in patients with long-standing Type 2 diabetes, there remain modest, but significant, long-term benefits of blood pressure control with respect to overall and cardiovascular mortality, whereas there was no evidence of a sustained benefit from intensive glucose control.

Financial & competing interests disclosure

The author has no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.

No writing assistance was utilized in the production of this manuscript.

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