

The global challenge of diabetes

In advance of the annual American Diabetes Association Scientific Sessions taking place between June 6–10 in San Francisco, much of the focus in this week's *Lancet* is on the link between diabetes mellitus and heart disease.

The International Diabetes Federation estimates that 246 million adults worldwide have diabetes mellitus. The incidence of diabetes is escalating to epidemic proportions and by 2025, the figure is expected to reach 380 million. The inexorable rise of diabetes parallels that of the obesity pandemic spreading throughout both industrialised and developing countries. In 2005, about 400 million adults were obese; it is anticipated that this will almost double by 2015. Diabetes accounts for around 6% of total global mortality, with 50% of diabetes-associated deaths being attributed to cardiovascular disease. Although the impending burden faced by health-care providers and services is immense, with appropriate management programmes and prevention strategies targeting high-risk individuals, much of the morbidity and mortality of diabetes are preventable.

Addressing diabetes in different subpopulations poses numerous clinical dilemmas. Notably, the predisposition to develop diabetes and the course of the disease varies by ethnic group. In today's *Lancet*, Srikanth Bellary and colleagues describe findings from the United Kingdom Asian Diabetes Study, which highlights particular problems faced when managing diabetes among the UK south Asian population. For example, compared with white Europeans, individuals of south Asian origin tend to present with earlier onset type 2 diabetes and have a higher morbidity and mortality. Similarly, in the USA, Hispanics and African-Americans are disproportionately affected by diabetes, and experience more complications and higher mortality than white people.

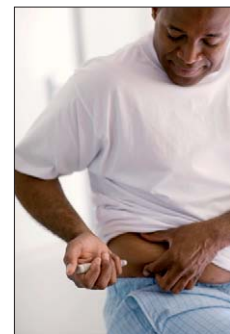
Another emerging high-risk group includes children and young people. In today's *Lancet*, Valma Harjutsalo and colleagues show that the incidence of type 1 diabetes in Finnish children is rising at such an accelerated rate that estimates for 2010 were surpassed by 2000. But it is not only type 1 diabetes that is becoming more prevalent in young people. An estimated 22 million children worldwide are obese or overweight, and, unsurprisingly, the greater occurrence of obesity in young people has been accompanied by an increase of early onset

type 2 diabetes. This form of diabetes might have a more aggressive phenotype than that of adult onset, and although the longer-term health consequences of early onset diabetes have not been fully elucidated as yet, it seems inevitable that paediatricians could in future face the unenviable prospect of managing cardiovascular disease in this vulnerable group.

The risk for children can begin as early as in utero, with evidence suggesting that the offspring of women with gestational diabetes are at increased risk of developing glucose intolerance and diabetes in later life. Mirroring the upward trend of diabetes and obesity, and worryingly for women and their children, the incidence of gestational diabetes is also spiralling upwards, now affecting up to 5% of pregnancies.

As the global burden of diabetes steadily escalates, there is a need for novel treatments to slow disease progression and achieve metabolic control. Research into newer ways to use established drugs, such as insulin and metformin, is underway. For example, in today's issue, Jianping Weng and colleagues show that early insulin therapy in type 2 diabetes has the potential to alter the disease course. Insulin is also being investigated in the prevention of type 1 diabetes in high-risk populations. Earlier this month the results from a large randomised open-label trial showed that perinatal outcomes following the use of metformin in gestational diabetes were no worse than when insulin was used, thereby offering these women increased treatment options. But it is not only the traditional medical aspects of diabetes that are the subject of intense scientific study; diabetes is also at the forefront of cutting edge research. Islet-cell transplant is now a clinical reality in ameliorating type 1 diabetes, and recent advances in stem cell research offer the hope of even a potential cure in the future.

We are continually learning more about the pathogenesis and management of diabetes, and its intertwining association with obesity and cardiovascular disease. Diabetes—a disease recognised centuries ago—has entered an era of exciting scientific research, discovery, and controversy. The challenge is to translate research findings into substantial clinical improvements for patients. Although prospects are hopeful, they are not assured. ■ *The Lancet*



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For more on **diabetes prevalence** see <http://www.idf.org>

For more on **metformin in gestational diabetes** see *N Engl J Med* 2008; **358**: 2003–15. DOI:10.1056/NEJMoa0707193