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<th>Title</th>
<th>Childhood diabetes mellitus</th>
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40.1 Diabetes epidemiology

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Global prevalence estimates (WHO) suggest that there are currently 140 million  
individuals with diabetes mellitus (DM) worldwide. This figure is expected to more  
than double, to 300 million, by 2025. Taking a global perspective, the major burden  
comes from type 2 DM. While type 1 DM accounts for 15-20% of total DM in  
Caucasians, this figure is well below 5% for non-Caucasian populations.  
Both type 1 and type 2 DM appear to have genetic and environmental determinants  
although the relative contributions and nature of these determinants are different for  
each type.  
Type 1 DM shows a rising incidence globally. Incidence rates vary from 1-  
2/100,000/pa in low incidence areas, such as the Asia-Pacific Region, to 20-  
30/100,000/ pa in certain Caucasian populations. The lower incidence in Asia may be  
partly explained by a lower incidence of the autoimmune form of the disease.  
Rising prevalence rates of type 2 DM have reached epidemic proportions in many  
parts of the world. The Asia-Pacific Region is at the forefront of this epidemic.  
Prevalence rates of approximately 40% have been documented among adult  
Nauruans and urbanised Australian aborigines and Papua New Guineans.  
Longitudinal data from Da Qing, China indicate a trebling of prevalence between  
1986 and 1994. Age-standardised prevalence rates in most urbanised or industrialized  
Asian populations are in the region of 8-10%, but remain lower in populations which  
remain traditional, or are in the earlier stages of industrialisation.  
The rising prevalence of type 2 DM is most strongly associated with aging,  
increasing indices of obesity, physical inactivity and urbanisation. A positive family  
history is also a strong determinant, particularly in young patients. Type 2 DM is  
being seen with increasing frequency in the young and is often associated with other  
components of the Metabolic Syndrome.  
The situation with regard to type 2 DM, particularly in the Asia-Pacific Region,  
poses an increasing threat to health care systems. Morbidity and excess mortality,  
associated with long-term diabetic complications are already exacting an enormous  
toll. The sheer scale of the problem means that effective prevention and treatment  
measures require centralised effort with the engagement of governments. The  
treatment of type 2 DM in the Asia-Pacific Region is often inadequate and the  
resulting poor glycemic control further exacerbates the problem posed by long-term  
complications. Urgent action is mandatory.

40.2 Childhood diabetes mellitus

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Although childhood diabetes mellitus is the second most common chronic  
disease in the West, it is rare in Chinese with an incidence of 1-2 per 100,000  
children under 15 years of age. In diabetic patients of childhood onset, we  
have found that amino acid residue 57 of the DQ8 chain is unlikely to have a  
major effect on diabetes susceptibility in Chinese. The mitochondrial DNA  
A to G 3243 mutation was only found in one out of over 60 patients we have  
tested. Analysis of insulin gene linked polymorphic region in Chinese  
diabetic patients revealed that all of them had class I VNTR alleles but the  
predominance was not different from control subjects. About 20% of the  
patients had onset of disease under 5 years of age and these children require  
special care. Most of patients are treated with twice daily combination of  
short-acting and intermediate-acting insulin while older patients are on  
tensive treatment regime with multiple insulin injections. Renal  
complications were found in 11.8% of 76 diabetic patients of childhood onset  
with a mean duration of diabetes of 10.3 +7.8 years. Two patients developed  
microalbuminuria only after 2 years of disease. Hypertension was found to  
be a significant risk factor for the development of diabetic renal complication.  
Although clinical neuropathy is rare in childhood, subclinical neuropathy  
could be detected on electrophysiological studies in 68% of diabetic children  
followed up in our clinic. Multi-disciplinary teams in the management of  
diabetic children are available in most hospitals under the administration of  
the Hospital Authority. Attempts have been made to improve the awareness of  
childhood diabetes in the community and in schools. In recent years,  
camping has been promoted both for recreation as well as education for our  
diabetic children and parents.

40.3 Diabetes mellitus complicating pregnancy

40.4 Macrovascular diabetic complications: risk factors and prevention