factor for later asthma,[9] preventing it by vaccination or passive immunotherapy[10] might reduce the frequency of childhood wheezing in later life, while Illi et al's study suggests that preventing colds might have the opposite effect. Knowing exactly which "dirt" provides the best education for the immune system and how to mimic its effects in a cleaner environment seems to be the key to reversing the rise in atopic diseases.

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Type 2 diabetes in children

Exemplifies the growing problem of chronic diseases

Type 2 diabetes mellitus in children is an emotionally charged issue and an emerging public health problem.[1 2] Until recently most children with diabetes mellitus had type 1, one of the most common[3] and increasingly prevalent[4] chronic diseases in children. Increasingly, however, type 2 diabetes is being reported in children from the United States, Canada, Japan, Hong Kong, Australia, New Zealand, Libya, and Bangladesh.[5]

The prevalence of type 2 diabetes in children ranges from 4.1 per 1000 12-19 year olds in the US to 50.9 per 1000 15-19 year old Pima Indians of Arizona.[1 2] Between 8% and 45% of recently diagnosed cases of diabetes among children and adolescents in the United States is type 2, and the magnitude of this disease may be underestimated.[1 2] The prevalence of the disease is on the rise in North America, and its incidence almost doubled in Japan between 1976-80 and 1991-5—from 7.3 to 13.9 per 100 000 junior high school children.[5] These trends coincide with the rising prevalence of overweight and physical inactivity world wide.[5 6–8]

Among US children the mean age at diagnosis of type 2 diabetes is between 12 and 14 years, corresponding with puberty; the disease affects girls more than boys, predominantly people of non-European origin, and is associated with obesity, physical inactivity, a family history of type 2 diabetes, exposure to diabetes in utero, and signs of insulin resistance.[1 2] At diagnosis the affected child may present with weight loss, ketosis, and acidosis.[1 2] Insulin and C peptide levels are often raised and antibodies absent, which may help differentiate type 1 from type 2 diabetes, but insulin secretion may well be blunted at diagnosis.[1] Haemoglobin A_{1c} levels may range from 10% to 13%, and a sizeable proportion of patients have hypertension, hypertriglyceridemia, albuminuria, sleep apnoea, and depression,[2] and these factors may worsen over time.[9] However, treatment protocols vary considerably, and several of the drugs used for glycaemic, blood pressure, and lipid control are not approved for use in children.[1 2]

To respond to this emerging problem, the American Diabetes Association and the American Academy of Pediatrics issued a joint consensus statement, and the Committee for Native American Child Health is developing treatment guidelines based on expert opinion. The National Institutes of Health and the Centers for Disease Control and Prevention have each embarked on new research programmes to improve gaps in our knowledge. So, what do we need to know and do?

Firstly, we need to develop case definition(s) that will differentiate between types of diabetes in children, and will be suitable for estimating the magnitude of the disease in populations[2] and for clinical diagnosis.[1] Case definitions for public health surveillance and clinical purposes should involve simple low cost tests, an issue of importance to poor countries and communities.

Secondly, epidemiological data on the magnitude of the problem, its secular trends, and follow up of incident cases are needed for several at risk populations.[1 2] Limited data are available in selected populations such as the American Indians, but few data exist for several parts of the world where the disease is prevalent.

Thirdly, adult studies have shown efficacious interventions for type 2 diabetes, but their safety and efficacy in children is not known. Also needed are well coordinated, multicentre trials testing the feasibility of multiple risk factor reduction in children and its benefits for practical health outcomes, such as the early stages of vascular disease.

Fourthly, despite efficacious treatments, the quality of care for adults with type 2 diabetes remains suboptimal.[10] This situation is likely to be worse for children and adolescents[1 2] because this is a new problem for clinicians; adolescents may be particularly reluctant to make behavioural changes, manage their disease, and accept follow up; and access to health care may be inadequate. Carefully conducted studies of quality of care and of potential interventions among children are needed.

BMJ 2001;322:377–8

Finally, type 2 diabetes in children offers some unique opportunities to understand the causes of the disease and of insulin resistance[1 2] and to plan primary prevention. Early onset of diabetes may be due largely to genetic factors, which would mean that identification of genetic mechanisms might be profitably pursued in children. On the other hand, all societies worldwide are undergoing changes that are leading to major behavioural and environmental modifications. Among adults type 2 diabetes is highly related to behavioural and environmental factors[11]; the effect of these factors on children needs to be understood.

The emergence of the disease in young people embodies the growing problem of chronic diseases worldwide and their extension to youth. The rising prevalence of obesity and type 2 diabetes in children is also the unforeseen consequence of worldwide industrialisation. To fight type 2 diabetes as a paediatric disease will require use of recent medical advances but will also require understanding and questioning the unwanted changes from industrialisation. Gaps still exist in our knowledge of disease classification, magnitude and trends, causes, treatment efficacy and safety, quality of care, and behavioural and environmental factors. Thus, we need worldwide cooperation and collaboration to develop studies in each of these areas using standardised protocols. In the meantime primary care workers should watch out for type 2 diabetes in children.

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Prognostic factors in prostate cancer

Pathologists glean a wealth of clinical detail from the smallest piece of tissue

Prostate cancer is a leading cause of morbidity and mortality in men, accounting for about 30% of all new cases of cancer and 14% of deaths from cancer. Despite considerable advances in our ability to detect and treat prostate cancer, there have been no significant corresponding decreases in morbidity and mortality.[1] The two main issues for clinicians and pathologists involved in prostate cancer are early detection of the cancer and identifying the prognostic factors that predict outcome in individual patients.[2]

Early detection of prostate cancer, preferably in the preinvasive phase (in lesions such as high grade prostatic intraepithelial neoplasia), is important if a treatment can be found that will arrest development of the cancer. Although a relatively new concept, chemoprevention is a promising strategy for preventing or arresting the development of prostate cancer and is most effective in the early stages of cancer formation, when reversibility may be feasible.[3]

Much research effort has also gone into the prognostic factors that can predict outcome in individual patients with prostate cancer, and these were the subject of two recent international consensus conferences.[4 5] The goal is to tailor the therapeutic approach to the clinical, morphological, and molecular features of each patient. Many of the clinically important predictive factors in prostate cancer are still derived from a pathologist's examination of tissue specimens using light microscopy, but the challenge of assembling the information is such that the use of artificial neural networks is expected to improve accuracy in diagnosis, staging, and treatment outcomes for prostate cancer.[4 5]

In the first of the consensus conferences, organised by the College of American Pathologists,[4] a multidisciplinary group of clinicians, pathologists, and statisticians analysed the existing predictive factors and stratified them into categories reflecting the strength of published evidence and taking into account the opinions of the prostate working group members of the College of American Pathologists. Factors were ranked as: category I—those proved to be of prognostic importance and useful in clinical patient management; category II—those that have been extensively studied biologically and clinically but whose importance remains to be validated in statistically robust studies; and category III—all other factors not well enough studied to show their prognostic value.

This ranking was endorsed by the World Health Organization's second international consultation on prostate cancer,[5] whose emphasis was mainly on biopsy derived predictive factors. In particular, this meeting recommended the adoption in clinical practice of all the pathology factors in category I; stated that those in category II may be included, based on

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