Distinguishing between type 1 and type 2 diabetes can be difficult given the increase in the number of overweight and obese children, Dr. Larry C. Deeb said at the annual meeting of the Diabetes in Pregnancy Study Group of North America. “It is not crystal clear,” he said. The rising number of overweight and obese children in the United States means that more and more children are getting type 2 diabetes, but more children with type 1 diabetes also are overweight.

The classic picture of a child who is wasting away is frequently not the case in type 1 diabetes anymore. In fact, up to a quarter of children with type 1 diabetes might be overweight, said Deeb, president of medicine and science for the American Diabetes Association and medical director of the Diabetes Center at Tallahassee Memorial Hospital in Florida.

However, there are differences in presentation of illness that can help physicians distinguish between the two conditions.

Type 1 diabetes in children continues to be characterised by a short course of illness. About 35%-40% of subjects will have ketoacidosis. In children with type 1 diabetes, the C-peptide and insulin levels will decrease, but they might be preserved early on.

In some cases, family history can be a clue. About 5% of subjects have first- or second-degree relatives with type 1 diabetes.

Race and ethnicity also can help physicians figure out whether the diabetes is type 1 or type 2. Type 1 diabetes is still a disease mostly of people of northern European descent in the United States.

When dealing with type 2 diabetes, overweight is a significant factor. About 85% of subjects with type 2 diabetes will be overweight.

In general, the course of type 2 diabetes in children will be indolent. But a significant proportion, about 33% of subjects, will have ketonuria. And a surprising number, 5%-25%, have mild ketoacidosis, Deeb said.

Many children and adolescents at highest risk for type 2 diabetes are not being seen by a physician. You have some parents who bring children in, but the vast majority is not seen. This teen group is at risk to develop diabetes, and by the time they’re at risk, they’re not being seen. Therefore, they very well be may be all the way to sick.

In children with type 2 diabetes, C-peptide and insulin levels might increase, but they can be low at diagnosis with glucotoxicity and lipotoxicity.

Type 2 diabetes also is associated with insulin resistance, hypertension, dyslipidaemia, polycystic ovary syndrome (PCOS), and acanthosis nigricans.

“I never dreamed that I would treat so much PCOS as a paediatric endocrinologist,” Deeb said.

Family history can be a strong indicator of type 2 diabetes. Between 74% and 100% of these children will have a first- or second-degree relative with type 2 diabetes. In terms of race and ethnicity, type 2 diabetes is predominantly a disease of minority youth, but white children still have it.
Low Testosterone Called Common in Erectile Dysfunction and Diabetes

Low-testosterone problems are not as rare as you might think. That’s because they are associated with two common problems: erectile dysfunction and metabolic syndrome, Dr. Richard F. Spark said at the annual meeting of the American Association of Clinical Endocrinologists.

Some new developments indicate that there are a lot more patients with hypogonadism in your practise than we are aware of.

Spark said that one of the first reports that erectile dysfunction (ED) could be associated with low testosterone was his own, published in 1980. He measured serum testosterone in 105 consecutive patients who were seen for what was then called impotence. They found that 20 of those individuals had low serum testosterone, and when they were treated for that, their erectile dysfunction went away (JAMA 1980;243:750-5).

In 2000, a meta-analysis of studies of testosterone replacement suggested that 57% of patients with erectile dysfunction treated with testosterone had resolution of their problem, including 64% of those with primary hypogonadism (J. Urol. 2000;164:371-5).

Testosterone has got a bad rap because of all of the press about athletes who abuse anabolic steroids, and because the controversies regarding oestrogen/progesterone therapy for women have made people wary of hormone replacement.

Up until recently, the urologists had primarily insisted that there was no man [complaining of ED] in their practise who had low testosterone, and they all went on to have penile implants.

Low testosterone has also been associated with type 2 diabetes and metabolic syndrome.

In a study of 103 men with type 2 diabetes, 33% were found to have low testosterone levels, and they found low testosterone in all the age groups in the study (J. Clin. Endocrinol. Metab. 2004;89:5462-8).

Individuals with metabolic syndrome have a 2.6 times higher risk of having low testosterone than does the general male population, and low testosterone has even been shown to predict onset of type 2 diabetes.

Even Moderate Activity Benefits Overweight Older Women

Even as little as 72 minutes of moderate physical activity per week significantly improves cardiorespiratory (CR) fitness in previously sedentary overweight postmenopausal women.

This finding should be encouraging to sedentary adults who find it difficult to find the time for 150 minutes of activity per week, let alone 60 minutes per day, Dr. Timothy S. Church et al said in the May 16 issue of the Journal of the American Medical Association.

They examined the effect of different levels of physical activity on CR fitness in 464 postmenopausal women (mean age 57 years) who had hypertension and were sedentary, overweight, or obese. They were randomly assigned to a control group or one of three intervention groups in which they attended supervised exercise sessions in a laboratory three to four times per week for 6 months.

The exercise chiefly involved stationary cycling or walking on a treadmill.

The control subjects maintained their usual sedentary pattern of activity. Subjects in the intervention groups expended 4, 8, or 12 kcal/kg of energy per week. This corresponded to approximately 72, 136, or 192 minutes of moderate activity per week, which represents roughly 50%, 100%, and 150% of the Surgeon General’s recommendations, the investigators said.

Exercise adherence was excellent in all the groups, and the dropout rate was low. There was a strong, linear dose-response relationship between the amount of exercise and improvement in three measures of CR fitness, Church and his associates said (JAMA 2007;297:2081-91).

“Perhaps the most striking finding of our study is that even activity at the 4-kcal/kg per week level (approximately 72 minutes per week) was associated with a significant improvement in fitness, compared with women in the non-exercise control group,” they noted.

Fitness improved to a similar degree across all ethnic, age, and weight subgroups. It also improved regardless of whether subjects were taking hormone therapy, and independent of their baseline level of cardiorespiratory fitness.

Despite improvements in cardiorespiratory fitness, there was no weight loss or decrease in body fat, and no significant change in most cardiovascular disease risk factors, including blood pressure. The one exception was that waist circumference decreased with exercise.
Diabetes Linked to Increased Low-Dose Aspirin Resistance

Diabetic patients exhibit a higher prevalence of aspirin resistance at a dosage of 81 mg/day than do non-diabetics with coronary artery disease, Dr. Paul A. Gurbel said at the annual meeting of the American College of Cardiology.

In selected diabetic patients, an 81-mg dose of aspirin may not be sufficient protection against the formation of platelet aggregations, the pivotal event that causes heart attacks said Gurbel, director of the centre for thrombosis research at Sinai Hospital and a cardiologist at Johns Hopkins University, Baltimore.

A second key finding of his study of aspirin resistance in 120 patients with stable CAD, including 30 with diabetes, was that not all of aspirin’s antiplatelet effects in diabetic patients were mediated by inhibition of cyclooxygenase-1, the pathway previously believed to be solely responsible for the drug’s antithrombotic efficacy.

The findings suggest that in diabetic patients there may be another pathway or pathways by which aspirin affects platelet inhibition beyond the way we conventionally think of how aspirin works.

Participants in the double-blind, crossover trial got aspirin at a daily dosage of 81, 162, and 325 mg for 4 weeks each in a randomised sequence. At the end of each 4-week treatment period, platelet aggregation was measured in a host of ways, including arachidonic acid–induced light transmittance aggregation, thromboelastography, urinary thromboxane levels, the VerifyNow aspirin resistance assay, and adenosine phosphate– and collagen-induced aggregation.

The prevalence of aspirin resistance at 81 mg/day was less than 5% in non-diabetic patients, but markedly higher in the diabetics. In most instances, however, boosting the dose in the diabetic patients reduced the prevalence of aspirin resistance to nearly the same low level that was seen in non-diabetics.

For now, in the absence of clinical outcomes data from large trials, Gurbel considers 162 mg/day better than 81 mg/day for cardioprotection in diabetic patients, while recognising that as the dose goes up, so does the bleeding risk.

Robert S. Rosenson, of the department of medicine and director of the preventive cardiology centre at Northwestern University, Chicago, commented that he found fascinating the suggestion that diabetic patients not only have more reactive blood components than do non-diabetic patients, but also a hotter, more reactive arterial wall. These observations could help explain their higher acute MI rates, compared with non-diabetics with CAD.

Gurbel noted that aspirin did not exhibit a dose-dependent inhibition of ADP-induced platelet aggregation in diabetics. This suggests a potential benefit for combining ADP-receptor blockers, such as clopidogrel, with higher-dose aspirin in diabetic patients, a possibility that deserves testing in a large-scale clinical trial, he said.

He predicted that funding will eventually be obtained for a large prospective study that establishes the link between platelet function and subsequent cardiovascular events. Once those data are available, he added, platelet-function testing may become routine in all patients with vascular disease.

“I think a one-size-fits-all concept for dosing antiplatelet therapy is flawed,” Gurbel said. “I think the day is coming when we will measure the aggregability of platelets as a cardiovascular risk factor. It’s the fundamental event that drives the lethality of heart disease, so why are we not measuring it?”
Caution Advised With Long-Acting Insulin Analogues

The long-acting insulin analogues glargine and detemir offer only minor, if any, clinical benefit, according to Dr. K. Horvath et al in the Cochrane Library’s collaborative review group on metabolic and endocrine disorders. Given this negligible benefit and the current lack of long-term safety and efficacy data, “we suggest a cautious approach to treatment with [glargine or detemir],” they said in an April 18 online issue of the Cochrane Database of Systematic Reviews.

The researchers conducted a meta-analysis of eight studies that compared the new, long-acting analogues with NPH insulin, which they termed the current standard of treatment. These studies involved 2,293 patients with type 2 diabetes who were assessed for 24-52 weeks. Unfortunately, the methodologic quality of all of these studies was rated low, which allows only “a cautious interpretation” of their results.

Glarine (Lantus) showed no superiority to standard insulin therapy in achieving metabolic control, and detemir (Levemir) showed only “clinically unimportant” superiority, Horvath et al said (Cochrane Database Syst. Rev. 2007 April 18;DOI:10.1002/14651858.CD005613.pub3). Nocturnal hypoglycaemic events were less frequent in patients treated with either of the two long-acting analogues than in those on standard insulin therapy, but no statistically significant advantage was noted. Moreover, all the reviewed studies were prone to reporting bias concerning this symptom, and the frequency of hypoglycaemia was very low, “making it unlikely to see an important clinical effect for the different treatments,” the investigators noted.

None of the trials investigated possible long-term effects of treatment with the new insulin analogues, and the maximum observation period was 12 months. The meta-analysis therefore “cannot provide any further guidance on potential adverse properties, such as mitogenic effects or progression of microvascular complications.” Similarly, none of the reviewed trials reported data on quality of life or costs, so these factors could not be assessed, they added.

Lipid Levels Linked to Glycaemic Control in Youth With DM

Poorer glycaemic control was independently associated with higher serum lipid levels in children with both type 1 and type 2 diabetes in a large, cross-sectional study. Higher haemoglobin A1c levels (HbA1c) were associated with significantly higher total cholesterol, LDL cholesterol, and triglycerides in a study of 1,963 children aged 10 years and older. These findings remained significant even after adjusting for age, gender, duration of diabetes, body mass index, and race/ethnicity. Glycaemic control did not correlate with HDL cholesterol levels.


Mean HbA1c concentration was 8.6% amongst the 1,680 children with type 1 diabetes and 8.3% amongst the 283 with type 2 diabetes. Amongst children with type 1 diabetes and poor glycaemic control, 35% had high concentrations of total cholesterol (200 mg/dL or greater), 27% had high LDL cholesterol (130 mg/dL or greater), and 12% had high triglycerides (200 mg/dL or greater). Amongst type 2 diabetes patients with poor glycaemic control, 65% had high total cholesterol levels, 43% had high LDL cholesterol, and 40% had high triglycerides.

For each unit increase in HbA1c, the slope of the increase in total cholesterol was 7.8 mmol/l in the type 1 group and 8.1 mmol/l in the type 2 patients. The authors were unable to establish a cause and effect relationship between poor glycaemic control and elevated serum lipids because of the cross-sectional design. Less than 1% of the SEARCH participants were taking a lipid-lowering drug. However, had they been adults, they would qualify for pharmacologic intervention based on their total cholesterol, LDL cholesterol, and triglyceride levels.

The results, the authors wrote, “suggest that a substantial proportion of youth with diabetes are not managed optimally with regard to two key drivers of outcome in diabetes: glycaemic control and lipids.”