Welcome to this review of the 21st World Diabetes Congress 2011 by Dr Brandon Orr-Walker who attended the Congress, which was held Dec 4–8, 2011 in Dubai, United Arab Emirates.

The World Congress of the International Diabetes Federation (IDF) is now a biennial event, and will next be held in Melbourne December 2013. In 2011 there were 15,000 participants, and the programme ran up to 13 concurrent sessions over 4 days. Selecting a few abstracts from the many excellent presentations is difficult, perhaps only a little easier as many reporting newer pharmaceutical results are not relevant here with our restricted medication choice. Other excellent presentations had limited or nonexistent abstracts to use, and others were far too broad or detailed to cover with brief commentary. For those interested, webcasts of many of the sessions are now publically available via a link from www.idf.org/worlddiabetesconference/general-info.

This Review has been created to allow those unable to attend, but who are keen to keep up with evidence based information and perspectives on progress in Diabetes research, to access a summary of significant clinical studies presented that are likely to affect current practice. Selection and review of the research has been carried out independently by Dr Brandon Orr-Walker, an Endocrinologist at Middlemore Hospital, who attended the IDF World Congress.

Dr Chris Tofield
Medical Advisor, Research Review
christofield@researchreview.co.nz

Effect of early multifactorial therapy on microvascular outcomes at 5 years in people with screen-detected T2DM: ADDITION-Europe trial

Authors: Sandbak A et al
Summary: These investigators evaluated the effect of early intensive multifactorial treatment, for screen-detected type 2 diabetes mellitus, on microvascular complications in patients aged 40–69 years from 343 practices (evaluable n=2861) randomised to target-driven intensive treatment of multiple risk factors or routine care. No significant between-group differences were seen for microvascular complications over 5 years of follow-up, including estimated glomerular filtration rate (which was lower in this study than levels previously reported), urine albumin-creatinine ratio and Michigan neuropathy questionnaire scores. Participants with higher baseline HbA1c, blood pressure and cholesterol levels were more likely to have missing data, as were female participants.

Comment: Large long-term studies have shown the benefit of improved glycaemic, blood pressure and lipid control in people diagnosed with type 2 diabetes. These studies are almost entirely in cohorts clinically diagnosed with diabetes, rather than in screen-detected populations. Latency to realise a reduction of events is well known, e.g. retinopathy. The benefit of multifactorial intensive management in people with screen-detected diabetes is less certain, and this study showed that the modest reductions of risk factors achieved did not reduce 'endpoints', at least at the 5-year mark. Earlier detection prior to development of complications and more modest abnormalities are likely factors. However, legacy benefits for glycaemic control in early treatment may still be associated with later benefits. The benefit of treating 'prediabetes' beyond CV disease risk is likely to be even less certain.

Late Breaking Abstracts Session; Oral presentation O-0598

Long-term cost-effectiveness of gestational diabetes mellitus screening, management and lifestyle intervention in India

Authors: Lohse N et al
Summary: These researchers applied a decision-analysis tool (defined by screening tests, target population, management strategy during pregnancy and postpartum lifestyle intervention) developed to assess the cost and health impacts of clinical strategy options for gestational diabetes in three Indian substates. Each screen was associated with costs of USD105–536 across the four settings, with USD671–1452 associated with each case of gestational diabetes identified. The cost effectiveness of screening compared with no screening was USD70–436 for each disability-adjusted life-year averted across the four settings, with reductions in type 2 diabetes and its treatment costs the main determinants of cost effectiveness.

Comment: Detection of diabetes in pregnancy is predicated on improvements of pregnancy outcome, with additional potential benefits in detecting future risk of established diabetes in the mother (as was well shown in the Diabetes Prevention Program initiated on average a decade after diabetic pregnancy) and risk of childhood obesity and future diabetes risk in the offspring. This study is of interest in modelling very favourable cost effectiveness of screening and management of gestational diabetes, based on the prevention of the future risk of diabetes in the mothers by disability-adjusted life-year. This is predominantly achieved by postpartum lifestyle changes. However, maintaining those changes, usually achieved during the pregnancy, in the postpartum period and incorporating into everyday life thereafter will be a huge challenge in real life.

Cost and Cost-effectiveness; Oral presentation O-0527
Excess mortality has remained high among people with diabetes in Finland

**Authors:** Forsaas E et al

**Summary:** This analysis of data from 284,832 Finnish patients with diabetes (FinDM II database) showed that while the prevalence of the disease increased by 83% between the end of 1995 and the end of 2007, mortality decreased in almost all age groups. However, compared with the general Finnish population: i) excess overall mortality was 3.9-fold and 4.35-fold greater for men and women with insulin-dependent diabetes, respectively; ii) excess mortality associated with coronary heart disease was 8.8-fold and 4.6-fold greater among women and men with diabetes, respectively; iii) excess mortality from cancer and coronary heart disease was increased among women with insulin-dependent diabetes; and iv) overall mortality was 1.65-fold and 1.75-fold greater among women and men, respectively, with noninsulin-dependent diabetes.

**Comment:** Scandinavian countries have well-developed healthcare systems and rich data, which are used as part of health planning. Utilising total country data in Finland (280,000 with diabetes at the end of 2007, compared with approximately 180,000 in NZ at the same time), time trends and comparisons with nondiabetic population statistics revealed three important facts: i) the prevalence of diabetes has increased; ii) for people with diabetes, age-adjusted mortality has reduced; and iii) there remains a persisting mortality excess, especially for women and those with type 1 diabetes, with CV disease and cancer being principal causes of death. Similar quality datasets are now being developed in NZ. It will be interesting to see the results from these in the coming years.

Burden of Diabetes and its Comorbidities; Poster Discussion D-0661

Long-term outcome of acute coronary syndrome in correlation to different types of glucose metabolism disorders

**Authors:** Koutsouvasilis A et al

**Summary:** This longitudinal, observational study of 520 patients admitted to a coronary care unit investigated the impact of glucose metabolism: A) prior diagnosis of diabetes (n=152 [29.2%]; B) newly diagnosed diabetes (57 [10.9%]); C) impaired glucose tolerance (IGT; 110 [21.1%]); and D) normal glucose regulation (201 [38.8%]). Using group D as the reference group, the risk of an acute coronary event (defined as having an admission diagnosis of myocardial infarction) was 1.75-fold greater among women and men, respectively, with noninsulin-dependent diabetes; and iv) overall mortality was 1.65-fold and 1.75-fold greater among women and men, respectively, with noninsulin-dependent diabetes.

**Comment:** These researches identified predictors of success associated with a lifestyle intervention programme (individuals and/or group sessions on topics such as bodyweight, healthy diet, exercise, smoking and alcohol consumption) for type 2 diabetes prevention in 3880 of the 10,149 high-risk participants with 1-year follow-up data. Bodyweight loss was seen in around 19%, while glucose tolerance improved in 33% of those with baseline impaired fasting glucose, improved glucose tolerance or screen-detected type 2 diabetes. A strong association was seen between baseline abnormal glucose tolerance and both bodyweight loss and improved glucose tolerance. Bodyweight loss was also more likely among participants with higher attendance at the intervention, those who were unemployed and those with a high initial BMI, while improved glucose tolerance was more likely in those with a high level of education.

**Comment:** The evidence base for prevention of type 2 diabetes in those at risk is well established in differing populations and independent of socioeconomic status. Real-world implementation is now underway in several countries, and several abstracts reported preliminary results at the conference (including Australia). This was the largest reported experience, and shows promising results for both weight loss and improved glucose tolerance. Factors predictive of improvements included baseline glucose tolerance, high BMI and ‘compliance’ with the intervention (visit attendance), and, perhaps surprisingly, being not employed was also associated with greater success. Lessons from real-world implementation are important to inform programme design and further implementation. Cardiovascular risk assessment is identifying many people who could potentially benefit from these lifestyle intervention programmes.

**Key Data for Policy Development; Poster Discussion D-0837**

Integrating primary and secondary care

**Presenter:** Simmons D

**Summary:** This presentation discussed a variety of considerations associated with the integration of primary and secondary care for managing patients with diabetes who require a level of expertise that primary-care providers are not equipped to handle. These considerations cover identifying those who need such care, a process for linking the services, availability of the appropriate specialist services and a means of ensuring such care links with other care required by the patient.

**Comment:** Dr David Simmons, who draws from his experience in NZ, makes a strong case for integrated healthcare response to conditions like diabetes. He wisely avoids discussing the response as either a primary or secondary care role, well aware that people with diabetes are frequently admitted to hospitals for management of diabetes complications or comorbidities (up to 25% per annum admitted and accounting for 20% or more of bed residency in hospital currently in NZ hospitals), and may require specialist services to deal with complex management issues, especially in the context of complications. He identifies some critical requirements for optimising care, including three important aspects of integration of primary- and secondary-care teams, namely communication, identification of responsibilities and development of expertise. Acknowledgement that many patients at highest risk are not able to take on the role of ‘the knowledgeable patient’ case management with dedicated case workers has been a successful strategy. Various structures and enablers to assist with integration and obstacles to progress were discussed.

Integrating Primary and Secondary Care; Symposium; Abstract 258

To subscribe to Research Review publications go to www.researchreview.co.nz
Glucose and insulin responses of brown, under milled and white rice diets using continuous glucose monitoring in overweight Asian Indians

Authors: Mohan V et al

Summary: Overweight nondiabetic volunteers (n=13) received three meals that only differed according to type of rice over three consecutive days in this randomised, crossover study. Compared with undermilled and white rice, inclusion of brown rice in the meal was associated with significantly lower: i) incremental area under the glucose level-time curve (3402.6 vs. 3316.9 and 4417.4 mg min/dL, respectively); ii) average change in insulin response (41.1 vs. 49.7 and 58.4 μU/mL, respectively); and iii) median difference in meal plasma glucose response (3.0 vs. 7.0 and 10.7 mg/dL, respectively).

Comment: Reducing glycaemic load, either by reducing total content of carbohydrate or by ‘glycaemic index’ of carbohydrate, is one lifestyle modification that can help in diabetes self-management. Using continuous glucose monitoring in overweight (South Asian criteria) nondiabetic subjects, this elegant study showed significantly lower 24-hour glucose and insulin responses with otherwise identical diets containing brown rice compared with white rice – a simple practical approach that is very relevant for people who use rice as a staple.

Fueling Type 2 Diabetes; Poster Discussion D-0986

Reducing diabetes risk by managing childhood obesity: UK national effectiveness data following the MEND Programme

Authors: Sacher PM et al

Summary: These researchers presented an analysis of data from 15,454 overweight/obese children aged 7–13 years enrolled in the UK MEND programmes, which include behaviour modification, nutrition education and physical activity, followed by 24 months of maintenance and support; the dropout rate was 11.4%. At the end of the intervention, the children had experienced changes in: i) BMI (–0.8 points; p<0.01, 95% CI: –1.0 to –0.6); ii) waist circumference (–2.6cm; z-score –0.18); iii) parent-reported physical and sedentary activity levels (0.21); and iii) median difference in meal plasma glucose response (3.0 vs. 7.0 and 10.7 mg/dL, respectively).

Comment: Increasing childhood obesity is a major concern, with increasing rates of type 2 diabetes at younger ages, even in adolescence, and the risks of later pregnancies with diabetes (and likely generational effects beyond) as two concerning outcomes. The problem is now being well articulated, and it is very encouraging to see large, scalable effective multicentre programmes targeting childhood (in this case age 7–13 years) obesity over a moderate timeframe (2 years). Similar results (compared with historical controls) have been shown in Project Energise in the Waikato region. These look like programmes worth investing in.

Marking, Bypassing and Treating Obesity; Oral presentation O-0533

Societal drivers of diabetes and implications for policy: a comparative analysis of 195 countries

Authors: Siegel K et al

Summary: The relationships between societal factors and diabetes prevalence across 195 countries were quantified by these researchers using data from the International Diabetes Federation, WHO, World Bank and Food and Agricultural Organization; diabetes prevalences were 1.6–30.9% (median 6.4%). The prevalence of diabetes increased by: i) 1.5%, 2.9% and 5.9% for every 5%, 10% and 20% increase, respectively, in sugar as a percentage of total energy availability; ii) 0.08% for each additional 100 calories consumed each day per person; and iii) 0.1%, 0.2% and 0.4% for every 5%, 10% and 20% decrease, respectively, in fruit and vegetable intake as a percentage of total energy availability. To a lesser extent, total vehicles and value added from the service industries were also associated with diabetes prevalence. All variables together explained 54% of diabetes prevalence variability, and no evidence of heterogeneity of variance was identified.

Comment: The increasing prevalence of diabetes is a worldwide problem, and comparative analyses from across the world can potentially offer important insights into the rapid rise in diabetes that has occurred since the 1980s. In this cross-sectional study, sugar availability in the diet and total calorie intake were associated with diabetes prevalence, and fruit and vegetable intake negatively associated with it. Vehicle number (as an indicator of a sedentary lifestyle) was more weakly associated with diabetes prevalence. Reverse causality seems unlikely. Clinicians will not be surprised by the finding of food intake as a significant factor for rising obesity in our societies. We have encouraged more activity and adequate fruit and vegetable consumption (in the hope it might displace higher calorie foods) – when are we going to tackle total calories and sugar intake? Any one for some 98% fat-free, 35% sugar breakfast cereal?

Epidemiology for Policy Development; Oral presentation O-0542

The Atchieve study: evaluation of insulin analogue therapy in 66000 people from four continents

Presenter: Home P

Summary: This presenter reported the efficacy and safety of initiating insulin analogue therapy in patients with type 2 diabetes who started or switched to such therapy in clinical practices in China, East Asia, South Asia, Latin America, Middle East/Gulf, North Africa and Russia. Change in baseline HbA1c was clinically beneficial after 24 weeks of treatment and did not differ significantly between regions, insulin type (premix, basal, prandial) and insulin starters versus switchers (–2.2% [p<0.001] vs. –1.8% [p<0.001]; similar findings were seen for fasting plasma glucose (–4.1 vs. –3.2 mmol/L for starters versus switchers). Reductions in postprandial glucose levels were clinically useful overall, despite some regional variations. Differences in hypoglycaemia incidence between insulin types were related more to baseline incidence of the study populations rather than the insulin chosen. No other serious adverse drug reaction patterns were seen.

Comment: There’s a simple message here – irrespective of country, type of insulin used (prandial, basal or mixed), not withstanding in this study one component was ‘analogue’) and whether an insulin start or substitution, substantial glycaemic improvements can be achieved in real-life settings with insulin therapy. Every practitioner or practice team who manages diabetes needs to be proficient, and preferably expert, with the use of this dose- and duration-titratable therapy.

Late Breaking Clinical Trials; Symposium; Abstract 294

Migration and globalization

Authors: Ukgbu UJ et al

Summary: This cross-sectional analysis of 39 male African US immigrants and 56 African-American men found that while the prevalence of ‘metabolic syndrome’ (MS) did not differ significantly between these two groups (10% vs. 13%; p=0.74), African immigrants had more hypertension, higher fasting and 2-hour glucose levels and more visceral adipose tissue than their African-American counterparts.

Comment: Anne Sumner from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK within the NIH) presented a brilliant lecture that illustrated how the MS can under-represent vascular risk in a new African immigrant population compared with African-Americans of the same ethnic ancestry, in part due to the dichotomous scoring system. Criticisms of MS risk prediction performance across differing ethnic populations and the lack of inclusion of age and gender in the ‘score’ are further significant limitations in the MS concept above and beyond identifying the multifactor effects of obesity. Her presentation went much further in noting the rapidity of changes of health status with migration, usually associated with rapid body weight gain, and that the ‘healthy immigrant effect’, described between 1960 and 2000, is now reversed as noncommunicable disease prevalence is rising rapidly in developing nations and established hypertension, dysglycaemia and dyslipidaemia are common there. Between 1980 and 2008, the percentage of overweight adults has increased significantly in almost all regions of the world, and for Oceania, South Asia and African nations, so has average systolic blood pressure. The message is very relevant in NZ, which has high obesity rates and high immigration.

Biological Mismatching and Modernization: Unravelling Multi-causality; Symposium; Abstract 135
“Sweet...!”

Lantus® (insulin glargine) is now fully funded for Type 2 diabetes.¹

It’s great news for your patients with Type 2 diabetes. Lantus is now fully funded for all type 2 diabetes mellitus patients who require insulin.¹¹

With many years of proven clinical evidence in diabetes treatment, Lantus has proven A1C efficacy.²⁻¹¹

As a 24-hour insulin; Lantus provides blood sugar control with just one dose a day, taken at the same time each day.¹¹ There is no pronounced peak, and less risk of symptomatic and nocturnal hypoglycaemic events than NPH in T2DM patients.¹¹²⁻¹³

Find out more about Lantus today.


Please review Full Data Sheet before prescribing - available at www.medsafe.govt.nz or from the sponsor.

Lantus (insulin glargine). Indication: Once-daily subcutaneous administration for type 1 and type 2 diabetes mellitus patients who require insulin for control of hyperglycaemia. Contraindications: Hypersensitivity to insulin glargine or any excipient. Precautions: Hypoglycaemia, possibly with delayed recovery or altered warning symptoms; hepatic, renal and visual impairment, lipodystrophy and other injection site or immediate-type allergic reactions; antibody production; not studied in children <6 years, pregnancy category B3, lactation; not intended for i.v. use; not recommended for treatment of diabetic ketoacidosis; LANTUS MUST NOT BE DILUTED OR MIXED WITH ANY OTHER INSULIN OR SOLUTION. Patient instruction on intercurrent conditions, blood glucose monitoring, injection technique recommended. Interactions: Oral antidiabetic agents; cardiovascular, analgesic, anti-inflammatory, neurological, antipsychotic agents, antibiotics, corticosteroids, other hormonal therapies, diuretics, protease inhibitors, sympathomimetics, lithium, alcohol, sympatholytics including β-blockers, others. Adverse effects: Hypoglycaemia, injection site reactions, visual disturbances, others. Dosage and Administration: Subcutaneous, once daily, abdominal, thigh or deltoid administration; blood glucose monitoring is recommended. Lantus is equipotent to human insulin. Initial dose should be determined individually, depending on desired blood glucose levels and doses and timing of any antidiabetic medication, including Lantus. For changeover from once-daily NPH initial dose usually not changed; for changeover from twice-daily NPH to once-daily Lantus, initial dose usually reduced by approximately 20% compared to total daily NPH dose; for initiation of type 2 patients, initial dose is usually approximately 10IU. For secondary dose adjustments, renal, hepatic impairment see full Data Sheet.

Medicine Classification: Prescription Medicine. Presentations: Lantus (insulin glargine injection) 100 U per mL is available in packs of 5x3mL cartridges, 5x5mL cartridges in SoloStar pre-filled pens and 10mL vials. Sponsor: Sanofi. Level B, James & Wells Tower, 56 Cabley Street, Ellerslie, Auckland. Lantus is a Funded Medicine.

TAPS PP1704

SANOFI DIABETES

Publication of this Conference Review was supported by an educational grant from sanofi-aventis. The content and opinions expressed in this publication do not necessarily reflect the views of sanofi-aventis unless so specified.