treatment with either oral or injectable medications.

Our challenge now is to understand where this fits into real world management of T2DM in Australia.

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Invited talk: Prediabetes phenotypes improve prediction and prevention of type 2 diabetes

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The prevalence of prediabetes is increasing world-wide. Prediabetes is not only associated with an increased risk of type 2 diabetes and cardiovascular disease (CVD), but also of dementia and cancer, and, therefore, has recently gained much attention in the field of clinical research. In prediabetes lifestyle and pharmacological intervention can prevent diabetes and possibly CVD. Thus, the implementation of interventions in this condition is of major importance. However, prediabetes is a very heterogeneous metabolic state, both in respect to its pathogenesis and prediction of diseases. Thus, better understanding of its pathophysiology and stratification of the risk should be done. This can be achieved by applying precise phenotyping strategies. It will be discussed how stratification of individuals with prediabetes at baseline into a high-risk and a low-risk phenotype, based on corrected insulin secretion and insulin-resistant NAFLD, may help to determine the effectiveness of a lifestyle intervention to revert individuals to normal glucose regulation. By addressing evidence that has derived from lifestyle intervention studies the further aim is to clarify whether these phenotypes can be used for individualised prediction and prevention of cardiometabolic diseases in prediabetes.

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Invited talk: Metabolic syndrome: Sympathetic (neural) perspectives

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The sympathetic nervous system (SNS) plays a pivotal role in both cardiovascular and metabolic regulation. Prospective cohort, offspring and clinical studies indicate that elevated SNS activity is an early pathophysiological phenomenon that predicts future metabolic abnormalities (insulin resistance, hyperglycaemia, type 2 diabetes, dyslipidemia and adiposity), increases in blood pressure and cardiovascular risk. In established obesity several factors act in concert to maintain chronic elevation of central sympathetic drive to skeletal muscle, the kidneys and the heart. Primary amongst these are hyperinsulinemia, impaired baroreflex function, sleep apnoea and elevated adipokine levels.

Using the techniques of clinical microneurography to quantify sympathetic nerve firing rate in skeletal muscle vasculature and isotope dilution to estimate total body noradrenaline spillover rate, our group has demonstrated associations between SNS activity and insulin resistance and insulin clearance (inverse) in obese cohorts. Furthermore, insulin resistant obese individuals display blunted postprandial sympathetic response to oral carbohydrate loading compared with age- and body mass index-matched insulin sensitive controls. This is relevant to body weight homeostasis, given that facultative thermogenesis accounts for 3—4% of daily energy expenditure. The sympathetic neural signal is also modified by the rate of removal of noradrenaline from the neuroeffector junction and plasma compartment. We recently reported reduced plasma noradrenaline clearance in obese treatment naïve type 2 diabetic patients compared with controls with impaired glucose tolerance. This was attributed to reduced peripheral noradrenaline transporter (NET) expression, and haemoglobin A1C was an independent inverse predictor of NET levels.

Weight loss and exercise are first line treatments for the metabolic syndrome that elicit sympathoinhibitory effects and reverse blunted postprandial sympathetic response in insulin resistant states. The magnitude of sympathoinhibition is greatest in hyperinsulinemic subjects. Insulin-sensitising, oral hypoglycaemic and sympathomoderating drugs may offer other approaches to modify sympathetic