frequency of the Epsilon 4 allele among diabetic controls [DC 35 (22%), DN (36) 17%, DR (41) 15%, $P = 0.09$].

Conclusions: Epsilon 4/4 genotype protects against retinopathy in TIDM. Epsilon 4 has a relative charge of and higher affinity to LDL receptor than epsilon 2 allele. This may improve lipid clearance from the circulation and reduce risk for retinopathy.

A16

Comparison of the LDIflare and skin nerve fibre density in the assessment of diabetic neuropathy

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Until recently skin nerve fibre density (NFD), which assesses structural damage, has been proposed as the gold standard for detecting small fibre neuropathy (SFN). We recently described a highly reproducible technique, the LDIflare, which assesses SFN by measuring neuro-vascular function. We compared these methods in 15 healthy controls (HC), 10 painful (PFN) and 12 painless (PLN) neuropaths. The LDIflare was assessed by heating dorsal foot skin to 44 degree C to induce axon reflex vasodilatation and measuring the flare size by laser Doppler imaging. NFD per mm^2 was assessed in 3 mm skin biopsies immunostained with PGP 9.5 taken from the same site. NFD in HC, PFN and PLN were 424.9 ± 176.3, 307.6 ± 164.5 and 205.8 ± 165.3 [mean (SD)], respectively. Mean NFD was significantly lower in the PLN compared to controls ($P = 0.017$) but was not significantly lower in PFN. In contrast, the LDIflare in cm^2 was reduced in both neuropathic groups (PFN 1.59 ± 0.41; PLN 1.51 ± 0.56) compared to HC 4.38 ± 1.4 ($P < 0.001$). Across the groups NFD correlated well with LDIflare ($r = 0.57$, $P < 0.0001$). Thus, the LDIflare demonstrates functional abnormalities in both painful and painless neuropathy whereas skin nerve fibre density only detects more advanced structural neuropathy. Furthermore, as the LDIflare correlates with NFD, is non invasive and has excellent reproducibility, it should be the preferred method for detecting small fibre dysfunction in diabetes.

A17

The association between type 2 diabetes mellitus, coronary heart disease risk and the metabolic syndrome in patients with hypertension

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The metabolic syndrome (MetS), predicting coronary heart disease (CHD), is a compound of risk factors including diabetes, obesity and hypertension. The relationship between the development of MetS, diabetes and CHD in patients with established hypertension is unclear. Hypothesis: patients with hypertension developing MetS are at increased risk of diabetes and CHD compared to patients who do not develop MetS. We prospectively studied 284 patients (100 with existing/established MetS) with hypertension but without diabetes and CHD over 4 years. Over the 4 years of follow-up, 75/184 (41%) initially free of MetS at baseline subsequently fulfilled the modified NCEP criteria for MetS. These patients (i.e. 'developing MetS') had higher baseline BMI, triglycerides and lower HDL cholesterol, with higher calculated CHD risk (all $P < 0.001$) than those who did not develop MetS. The 4-year odds ratios of developing diabetes in patients with established MetS (23%) and patients developing MetS (13%), versus patients not developing MetS (4%, $P < 0.001$) were 7.8 (95% CI: 2.6–23.5) and 4.0 (95% CI: 1.2–13.4) respectively. Patients with hypertension developing MetS have increased CHD risk (Framingham equation) and also risk of developing diabetes even before fulfilling the criteria for MetS, and the former is comparable to patients with established MetS. This data suggest a high-risk phase not adequately identified by current diagnostic thresholds for MetS.

A18

Predicting increasing glycaemic burden (GB) using logistic regression models derived from routinely collected clinical data

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When glycaemic control deteriorates, it is hard to retrieve and patients are at risk of complications. We developed predictive models to identify patients whose treatment was likely to fail. 5027 patients with diabetes were followed over six years. GB was calculated using 92 000 HbA1c measurements. Logistic regression models with 10-fold cross validation were derived with data from 2500 random patients, and tested on the remaining 2527. Performance was assessed using area under receiver operating curve (AUROC). Complete follow-up data were available for 91.8%. A model to predict likelihood of death was derived (AUROC 0.84, SE 0.01). Output from this was included as input into GB models. Models for positive GB were derived for thresholds equivalent to average HbA1c of 7.0, 8.0 and 9.0. The models all performed as well on test data with AUROCS of 0.83 (SE 0.01), 0.89 (SE 0.008) and 0.90 (SE 0.01). The model to predict very poor control (HbA1c >9.0%) required fewest inputs and identified patients with deteriorating control with sensitivity of 84.3% and specificity of 84.2%. Likely treatment failures can be identified using routine clinical data. Use of statistical models could improve targeting of intensive treatment, and reduce the burden associated with treatment failure.

A19

The i-DREAM Project
Interactive – diabetes research evidence application in management

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Background and aims: A major barrier to providing effective healthcare is implementation of research evidence. An active and interactive learner centred tool is required to take research evidence into clinical practice. i-DREAM is a clinical tool that helps clinicians to make evidence-based decisions, provides a comprehensive diagnosis and management plan and has links to abstracts, slide presentations and hospital guidelines.

Methodology: Clinical application of i-DREAM was explored in an audit. The i-DREAM program identified the relevant clinical study based on patient parameters. Fifteen clinicians (11 doctors, 3 specialist nurses and 1 pharmacist) were given 10 case notes and asked to comment upon clinical management. The accuracy of their management plan was assessed using a scoring system.

Results: On average, clinicians were aware only of '7.6' of the 12 trials and using only '5.5' of these in clinical management. The score (based on identification of relevant studies and correct management plan) was 69% before and significantly better at 98% after using i-DREAM ($P < 0.001$).

Conclusion: i-DREAM is a simple tool that can be applied in clinical practice to use the best evidence from clinical trials for each individual patient according to their clinical characteristics.