frequency of the Epsilon 4 allele among diabetic controls [DC 35 (22%),
DN 36 (17%), DR 41 (16%), 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**

**STM KRISHNAN*, C QUATTRINI†, N BAKER*, M JEZORSKA*, R MALIK† and
G RAYMAN‡**

*The Diabetes Centre, Ipswich Hospital, Ipswich, UK, †The University of
Manchester, Manchester, UK,
‡Manchester, Manchester, UK

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 measur-
ing the flare size by laser Doppler imaging. NFD per mm² was assessed in
3mm 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 cm² 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**

**GI VARUGHESE, HS LIM, GYH LIP, DG BEEVERS and AD BLANN**

University Department of Medicine, City Hospital, Birmingham, UK

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 develop-
ing MetS (4%) 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 dia-
betes even before fulfilling the criteria for MetS, and the former is compar-
able 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**

**JA CLAYTON*, EYH KHOO*, RF HARRISON† and RL KENNEDY‡**

*Department of Diabetes and Endocrinology, Queen’s Medical Centre,
Nottingham, UK, †The University of Sheffield, Sheffield, UK

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 measure-
ments. Logistic regression models with 10-fold cross validation were derived with data from 2500 random patients, and tested on the remain-
ing 2527. Performance was assessed using area under receiver operating curve (AUCROC). Complete follow-up data were available for 91.8%. A model to predict likelihood of death was derived (AUCROC 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 AUROC 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**

**L VARADHAN*, S JAIVEER*, J MORRISSEY*, S SHAIKH‡ and V PATEL*†**

*Diabetes Centre, George Eliot Hospital NHS Trust, Nuneaton, UK,
†Warwick Medical School, University of Warwick, Coventry, UK

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 clini-
ical 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 iden-
tification 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 prac-
tice to use the best evidence from clinical trials for each individual patient according to their clinical characteristics.