Results: Sitagliptin was most effective in lowering postprandial glucose rise (change in postprandial incremental area under the curve −8.1mmol/min/l gliclazide, −64.1mmol/min/l sitagliptin, p=0.01). In contrast gliclazide lowered fasting glucose more (−1.7mmol/l gliclazide, −0.2mmol/l sitagliptin, $p < 0.001$). Higher baseline fasting glucose was associated with greater effectiveness of gliclazide relative to sitagliptin [r=0.35 with on-treatment difference (sitagliptin – gliclazide), p=0.01]; there was a similar trend for fructosamine (r=0.22, p=0.11). In patients with baseline fasting glucose ≥12mmol/l post treatment fasting glucose was 3.4mmol/l lower on gliclazide than sitagliptin compared to 0.8mmol/l lower with baseline glucose <12mmol/l (p=0.02), and similarly for fructosamine (60.1μmol/l and 12.8μmol/l lower on gliclazide with baseline fasting glucoses ≥12mmol/l and <12mmol/l respectively, p=0.01). Baseline fasting glucose was not associated with differences in postprandial treatment response (p=0.5).

Conclusion: Patients with high fasting glucose respond relatively better to sulphonylurea than to DPP-IV therapy. Fasting glucose represents a potential clinical biomarker for stratification of second line treatment in Type 2 diabetes.

A4 (P277)

Intensification of metformin plus sulphonylurea dual therapy with dipeptidyl peptidase IV (DPP-IV) inhibitor vs insulin and the risk of cardiovascular events and mortality among patients with diabetes

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Aim: The preferred intensification treatment after failure of metformin and sulphonylurea combination therapy to achieve glucose control remains unclear. We aim to assess the time to acute myocardial infarction (AMI), stroke or death in patients who added DPP-IV inhibitor or insulin.

Methods: A retrospective cohort study was conducted on 16,518 patients who were newly treated with DPP-IV inhibitor or insulin following metformin plus sulphonylurea therapy failure between June 2007 and May 2013. Data were sourced from UK General Practices via the Health Initiative Network database. The risk of composite outcome was compared between therapies. Patients were followed up to 5 years for an outcome and analysed using Cox proportional hazard models to adjust for baseline and time-varying covariates. Propensity score matching on characteristics was performed to minimise confounding bias.

Results: Among 16,160 patients who received metformin plus sulphonylurea therapy for a median duration of 2.5 (interquartile range 1.1–4.4) years, 2,829 added DPP-IV inhibitor and 1,324 added insulin. Mean HbA1c level at intensification was 79 mmol/mol (9.4%) and follow-up was 2.2 years. The number of composite outcome events was 134 vs 208 among patients who added DPP-IV inhibitor vs insulin respectively (389 vs 424 events per 1,000 person-years; adjusted hazard ratio 1.14; 95% confidence interval 0.91–1.43; $p = 0.3$). The rates of component outcomes AMI, stroke or mortality were not significantly different ($p > 0.1$).

Conclusion: Addition of DPP-IV inhibitor vs insulin to patients who had failed treatment with metformin and sulphonylurea was not associated with a difference in the increased risk of composite cardiovascular outcomes and death.

A5 (P186)

Patient characteristics influence treatment response to second line glucose lowering therapy in two large UK cohorts: a MASTERMIND study

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Background/Aims: Choice of glucose lowering treatment after metformin in Type 2 diabetes is usually made on the basis of cost and side effect profile, rather than likely effectiveness. We assessed whether patient clinical characteristics were associated with HbA1c responses to second line glucose lowering agents, and therefore may help select the most effective agent.

Methods: 12 month glycaemic response (HbA1c change from baseline) was calculated on 47,381 patients with Type 2 diabetes treated with sulphonylureas (SU), thiazolidinediones (TZD), DPP-IV inhibitors (DPP-IVi) and GLP-1R agonists (GLP1RA) from the Clinical Practice Research Datalink (CPRD). We assessed the relationship between age at diagnosis, gender, BMI and glycaemic response using linear regression with adjustment for baseline HbA1c. The analysis was repeated in 4,308 participants receiving these medications in the Tayside GoDARTS cohort.

Results: Patients who were diagnosed younger had a smaller response to all agents (~2mmol/mol greater response for each 10 year increase in age at diagnosis, $p < 0.0001$ for all). Female patients responded better to TZDs (2.5mmol/mol greater HbA1c reduction compared with males, $p < 0.0001$), but worse to SUs (1.3mmol/mol smaller response, $p < 0.0001$). Obese patients (BMI ≥ 30) responded better to TZDs (1.8mmol/mol greater HbA1c reduction compared with non-obese patients, $p < 0.0001$), but non-obese patients responded better to DPP-IV inhibitors, and SUs (1.1 and 3.3mmol/mol greater response, $p < 0.0001$). Effect sizes in GoDARTS were similar to CPRD for all associations.

Conclusion: Clinical characteristics help determine likely initial response to second-line glucose lowering therapies and can influence therapy choice. Obese females have the greatest HbA1c response to TZDs, but least response to SU therapy.

A6 (P143)

Additive weight loss effect with a combination of an oral sodium-glucose cotransporter 2 (SGLT2) inhibitor and a glucagon-like peptide 1 (GLP-1) agonist in Type 2 diabetes

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Aims: Weight control is a key management target for many patients with Type 2 diabetes. Dapagliflozin was the first in class SGLT2 inhibitor to be licensed in the UK as a glucose lowering agent in Type 2 diabetes. Clinical trial data demonstrate weight loss with both dapagliflozin, an insulin independent drug, and GLP-1 agonist, an insulin dependent drug. However, it is not known whether these weight loss effects are additive when these

drugs, with differing mechanisms of action, are used concurrently.

Methods: A retrospective, systematic case-note audit was conducted of patients started on dapagliflozin and followed up for 1 year in a specialist diabetes centre of a London teaching hospital. Data collected included baseline characteristics, concurrent use of GLP-1 inhibitors, and weight changes and discontinuation rates.

Results: From the treatment cohort (n=88; mean age 59 years; 43% women) 48 (55%) were on dapagliflozin without a GLP-1 agonist and 40 (45%) had dapagliflozin in conjunction with a GLP-1 agonist. The mean weight change was −3.0kg (SD 2.4kg) and −7.2kg (SD 3.1kg) respectively in the two groups (p=0.02). No weight loss was observed in the cohort after dapagliflozin initiation in 12 people (25%) who were taking dapagliflozin and no GLP-1 agonist and nine people (23%) who were taking dapagliflozin and a GLP-1 agonist. Improvement in glucose control and blood pressure was comparable in both groups.

Conclusions: These data suggest that the combination of dapagliflozin and GLP-1 agonists results in additional weight loss compared to the SGLT2 inhibitor alone.

Diabetes UK Education and Self-management Award

A7 (P317)

My Diabetes My Way: supporting diabetes self-management

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Background: My Diabetes My Way (MDMW) is the NHS Scotland diabetes website for people with diabetes and their carers. It consists of an interactive information website available to all, and an electronic personal health record (ePHR) available to people with diabetes registered with a general practitioner in Scotland. We analysed usage and activity from September 2013 to September 2014.

Methods: We analysed system audit trails to monitor page accesses on the information website and logins and activity within the ePHR. The ePHR contains data from SCI-Diabetes, NHS Scotland's flagship diabetes record. This system sources data from primary care, secondary care, specialist screening services and laboratory systems. The data provide a more complete overview of diabetes than would be available from any single data source.

Results: The MDMW information website has received an average of 50,292 page accesses per month during 2014 (47% increase from 2013; n=34,151). By September 2014, 3,119 people with diabetes had accessed their clinical information (91% increase since September 2013; n=1,636). During September 2014, 664 people with diabetes accessed their diabetes records (73% increase from September 2013; n=383). Feedback: 'newly diagnosed and find MDMW very handy as it is near impossible to get through to the doctors these days to get results'; 'What a fab resource, wish we had this in @NHSEngland'.

Conclusion: MDMW is a useful aid to diabetes self-management in Scotland. It is unique in offering access to an entire national population, providing information from many diabetes related sources. Work continues to increase levels of uptake and awareness.

A8 (P318)

Audit results for X-PERT structured education

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Aim: X-PERT structured education has demonstrated improved clinical/psychosocial outcomes. To ensure national implementation meets National Institute for Health and Care Excellence (NICE) criteria and replicates clinical trial results, a continuous audit is conducted.

Methods: X-PERT educators collect and enter patients' baseline, 6 months and annual results onto the X-PERT audit database.

Results: 84 (100%) of X-PERT centres have submitted data for 55,646 people with new/established diabetes. Ethnicity: 84% white and 16% black and minority ethnic groups. Time to access education from diagnosis: 64% within 5 years, 15% within 10 years, 21% more than 10 years. Audit standards have been met with excellent attendance scores: 93.1% attend at least one session and 81.6% completed; patient evaluation scores 95%; empowerment scores increased by 22.9%; HbA1c reduction 6.8mmol/mol [95% confidence interval (CI) 6.4, 7.2] at 6 months and 5.9mmol/mol (95% CI 5.5, 6.3) at 1 year; weight loss 2.6kg (95% CI 2.1, 3.1) at 6 months, 3.7kg (95% CI 3.2, 4.2) at 1 year; waist circumference reduction 2.4 cm (95% CI 1.7, 3.1) at 6 months, 2.5 cm (95% CI 1.8, 3.1) at 12 months; 1.4 mmHg (95% CI 1.0, 1.8) reduction in systolic and 2.3 mm Hg (95% CI 2.0, 2.6) reduction in diastolic blood pressure at 1 year; 0.3mmol/l reduction (95% CI 0.28, 0.32) in total/low density lipoprotein cholesterol and 0.2mmol/l reduction (95% CI 0.17, 0.23) in triglycerides at 1 year.

Conclusions: National implementation of X-PERT education has met audit standards. X-PERT is well attended and evaluated and results in improved clinical and empowerment outcomes amongst people with newly diagnosed and existing diabetes.

A9 (P319)

Development, psychometric testing and evaluation of the Adolescent Diabetes Needs Assessment Tool (ADNAT) app

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Aims/objectives: To develop, psychometrically test and evaluate a needs assessment tool for young people aged 12–18 years living with Type 1 diabetes.

Methods: Using mixed methods, 260 young people were recruited between 2008 and 2014. Development included item selection, item review, pre-testing, piloting, online testing and app development, followed by qualitative evaluation at three clinical