

Diabetes in Scotland 2010 Abstracts

I. Integrated care
 R. Research – developing the evidence base
 PC. Primary Care
 S. Secondary Care
 P. Patient and Public Involvement

Abstract	Principal Author
<p>R1. Prospective observational study of referrals to hospital diabetes specialist care team (2004-2008) at a tertiary care centre</p> <p>Aims Hospital inpatient care has been improved over the last few years. In many hospitals diabetes inpatient specialist teams (DIST) provide care for diabetes inpatients and support other departments in looking after people with diabetes. The aim of this study was to review this information and to determine the types of patients referred, which departments requested specialist diabetes medical advice and what was the nature and frequency of these requests.</p> <p>Methods We have been prospectively recording information on the referrals made to our service since 2004. We audited all referrals from June 2004 – October 2008 retrospectively. To get more detailed information about the type and volume of work undertaken by the diabetes inpatient team we began another study over a two month period to get more information about the type of patient education, review of treatment and review of progress. .</p> <p>Results More medical (1879, 66%) than surgical referrals (641, 23%) were made. Medical referrals were most frequent from the medical admissions unit (411, 14.4%). Surgical referrals were most frequently done from vascular surgery (128, 4.7%). Most common reason for referral was hyperglycaemia (339, 15%). Reviewing inpatients was our main activity, where we mainly adapted medication either insulin or tablets and we continued to review. When giving information to patients areas of general education targeted most often were nature of diabetes, lifestyle, exercise and complications of diabetes. Though numbers of diabetes patients admitted per year increased, number of referrals have remained steady. In an interim analysis in 2005 a significant proportion (21.1%) of referrals were due to hypoglycaemia. Following the introduction of an education strategy the proportion of referrals per month for hypoglycaemia have reduced (27.4% in 2005 vs 14.7% in 2008 P =0.04).</p> <p>Conclusion In conclusion a diabetes inpatient service makes an important contribution to the care of people with diabetes in all major departments in the hospital. Evaluating the pattern of referrals can help identify staff education needs in the various hospital areas.</p>	<p>Lynn Walker</p>
<p>R2. Detection of higher antibody titre against glucose-modified HSA in diabetic patients with associated secondary complications</p> <p>Abstract Background: Glycation of serum proteins present unique immunological epitopes on their surface against which autoantibodies are generated that have possible role in enhancing pathogenesis of diabetic complications.</p> <p>Methods: In this, in vitro glucose modified human serum albumin (HSA) has been studied by different spectroscopic techniques (UV and fluorescence), gel electrophoresis and thermal denaturation profiles. The binding characteristics of circulating autoantibodies in diabetes patients and those with its associated secondary complications against native HSA (N-HSA) and glycated HSA (G-HSA) were assessed by direct and competition enzyme linked immunosorbent assay</p>	<p>Mohd. Wajid Ali Khan</p>

<p>(ELISA). The recognition of serum antibodies with N-HSA and G-HSA were also observed by more sensitive band shift assay. On the other hand, antibodies against G-HSA (G-HSA-Abs) were also induced in experimental animals and used as an immunochemical probe for the detection of gluco-oxidative lesions in blood proteins of patients (n=20) with diabetic retinopathy and nephropathy.</p> <p>Results: Modified G-HSA showed marked structural changes over N-HSA. High recognition of G-HSA was shown by diabetic serum autoantibodies. Diabetic patients with retinopathy, and nephropathy showed significantly ($p < 0.001$) stronger binding to G-HSA over N-HSA. Normal human sera exhibited negligible binding with either antigen. Band shift assay exhibited efficient binding of G-HSA with serum IgG of diabetic retinopathic patient as compared to IgG of diabetes alone or healthy subjects. Competitive inhibition ELISA results show significantly high binding of G-HSA-Abs to albumin and IgG isolated from diabetic retinopathic patients.</p> <p>Conclusion: These results suggest hyperglycemia that increases the oxidative stress contribute to the immunopathogenesis of diabetic associated complications.</p> <p>R3. Title: Building Scientific Base for Pre-Diabetes Care in UK South Asians - The PODOSA Trial (Prevention of Diabetes and Obesity in South Asians)</p> <p>South Asians adults in the UK have very high prevalence of type 2 diabetes. Studies internationally have shown that lifestyle modification can prevent diabetes, but we do not know about the effectiveness of this approach in UK South Asians.</p> <p>Objectives: To share key insights of methodology, preparation and application of user-friendly lifestyle resources, and behaviour change approaches in a cluster randomised, controlled trial, which aims to achieve weight loss in UK South Asians with IGT/IFG, by increasing physical activity and modifying diet and thus preventing progression to type 2 diabetes.</p> <p>Methods: We reviewed similar trials and discussed, debated and agreed amongst our multi-disciplinary group of researchers and collaborators and modified evidence based Counterweight leaflets and other available materials for PODOSA recruits and their families. The intervention group receives 15 dietetic contacts, and the control group receives 4 dietetic contacts, over three years.</p> <p>Results: Recruitment commenced in July 2007 and finished in October 2009. A total of 171 individuals with IGT/IFG comprising of 156 families (124 family volunteers) have been randomised into 15 visit or 4 visit group. The trial data collection forms have been translated and adapted by a multilingual panel; educational materials have similarly been adapted by the trial team and translated. The intervention has been receiving a positive feedback, verbal instructions seem to be better received by some families than written materials. Anthropometric measurements, Chester step test for fitness, questionnaires on food habits and IPAQ have been completed. To date, there is no drop out.</p> <p>Conclusions: The poster will share detailed developmental phase, designing the intervention, adapting data collection material, trial methodology and application of strategies used in the PODOSA trial.</p>	<p>Sunita Wallia for PODOSA</p>
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<p>11. Evaluation of a pilot project delivering skills and knowledge for diabetes care through video conferencing to remote and rural health professionals</p> <p>Background A key action from the Diabetes Framework Action Plan is the provision of locally based care and treatment for people with diabetes. This compels health boards to ensure staff are suitably skilled and knowledgeable about the condition. Given the geographical spread across NHS Highland and the challenge of delivering clinical education to remotely based professionals in meeting this directive, Highland Diabetes MCN opted to provide training using video conferencing (VC). VC can provide an equitable educational service to that of face to face, however the teaching and learning of practical clinical skills is still at a reasonably early stage of its genesis.</p> <p>Project summary & Evaluation Delivery of work based training and assessment to match the KSF applicable to health care professionals involved in the care of people with diabetes on a non regular basis was established through a point to point service. Training was undertaken on 4 occasions by video conference and 2 face to face; assessment was face to face at the practice setting a week after the training was delivered. Process evaluation was undertaken with the trainer throughout the project with reflections operating as part of the reflective cycle. Outcome evaluations concentrated on retrospective interviews and/or questionnaires to the students and trainer. Quantitative data was also obtained from the use of 5 point Likert scaled questions</p> <p>Results and Discussion Student assessment results were equitable between those who received training via VC and those who received it face to face. Students emerged more confident about practicing skills learned, both with a diabetic population and with a more generic clientele. Some students preferred the face to face delivery as they perceived that it enabled a more interactive learning climate. Concerns relating to transmission difficulties during the VC were offset by the recognised advantages that VC offers in terms of minimising travel, the impact on work demands and backfill arrangements. VC can mitigate the difficulties of accessing training for those who live in remote and rural populations. With attention to equipment suitability, and ensuring delivery of training is specific to the medium, VC can be a valuable training medium.</p>	<p>Sandra McRury</p>
<p>12. A pilot project delivering diabetes training and assessment through video conferencing to remote and rural health professionals</p> <p>Background Highland Diabetes MCN carried out an Educational and Training Needs Analysis (ETNA) which revealed the skills and knowledge gap between the competencies required in relation to the care and treatment of a diabetic population and the existing skills and knowledge of practitioners. The geographical spread of NHS Highland is approximately 33,000 km² and attending relevant training to develop currency of practice can be costly in terms of time and financial outlay to provide adequate cover of service as well as travel. Thus to overcome barriers of access, teleconferencing was identified by the MCN as a useful format to deliver diabetes skills and knowledge training.</p> <p>Methods A trainer was employed to develop and match the materials to NHS KSF 2004 and deliver the training through video conferencing (VC). Training elements were delivered over 2 half day sessions and comprised: Blood Glucose Monitoring Foot Screening Diet, weight and exercise Cardiovascular Risk</p>	<p>Sandra McRury</p>

<p>Reduction Packs of learning material were provided containing background information about each key area. Students recruited onto the course were health professionals who were required to provide diabetes care but not of the level of a community diabetes clinic. The trainer delivered the training to the first two cohorts face to face and to subsequent sites through VC - point to point “one site connecting to the central training delivery site. In total 34 students participated in training 22 via VC and 12 face to face from 5 locations up to 100 miles from the delivery site. Assessment of learning was undertaken face to face a week after training.</p> <p>Results: Participants welcomed locally based training as it minimised disruption to work and home life. VC was perceived as being less interactive than face to face but better than had been anticipated. Participants felt more confident about providing diabetes care and treatment. Application of the new skills was viewed as suitable for a wider clientele. Passing the assessment of learning did not differ significantly between those who received the training face to face and those who received the training through VC.</p> <p>P1 My diabetes my way patient access.</p> <p>Aims/Objectives: The Scottish Diabetes Framework Action Plan states that improvements are required to allow all patients access to their own electronic medical records. A system has been developed to allow patients access to their SCI-DC shared diabetes record via the NHS Scotland My Diabetes My Way information website which was launched in October 2008.</p> <p>Methods: Patients have been recruited via online registrations of interest from the website. A formal enrolment process has been defined including participants consenting for their data to be made available to them via the internet. Users will also be required to have their identity verified by their healthcare professional. User authentication is handled in partnership with the One Scotland Citizen’s Account portal who require healthcare professional verification to allow the system to be seen as a “trusted” NHS source. All data transfer and user access functions are implemented securely using industry standard technologies. Supporting information materials are tailored to the patient’s current condition and medications. Participants completed a pre-project questionnaire to document their expectations from the system.</p> <p>Results: 158 registrations of interest have been followed-up with 72 responses and 68 questionnaires received to date, fulfilling the requirements of the proposed pilot. 9 screens detail latest and historical information for 25 key diabetes data items including demographics, biochemistry tests, foot and eye screening, lifestyle factors, medication, patient diary and letters.</p> <p>Conclusions/Summary: The system will go live in February 2010 and will run for 3 months before being evaluated with the patients involved and using system audit trail information. It is expected that patients will feel more involved with their medical care and will have an increased awareness of guidelines and goals. Patient expectations expressed in the questionnaires will be formally analysed and reported upon. A wider rollout is planned incorporating additional interactive functionality and automated enrolment processes. Additional features will include patient contributions to the shared diabetes record for home blood glucose, cholesterol, blood pressure, weight and waist circumference results.</p>	<p>Scott Cunningham</p>
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<p>R4. Oats reduce postprandial inflammation in type 2 diabetes</p> <p>Aims Hyperglycaemia in the postprandial period may act as a trigger for inflammation, a specific risk factor for macrovascular disease in type 2 diabetes . We investigated the effect of an oat-based meal on postprandial fluctuations in CRP and adiponectin.</p> <p>Method 12 men with diet-controlled type 2 diabetes (mean HbA1c: 6.8%; mean age: 58.3yr) attended on two separate occasions a week apart and consumed either a standard test meal containing refined carbohydrates (total energy 3.2MJ; 51% carbohydrate, 29% fat and 14% protein) or an isoenergetic oat-based meal, identical in macronutrient composition containing 95g oats. Blood sampling was undertaken at fasting and 30, 60, 120 and 180 minutes postprandially. Plasma concentrations of glucose, insulin, CRP and adiponectin were determined. Analysis of variance was used to determine the effect of meal type on postprandial changes in plasma variables.</p> <p>Results Adiponectin concentrations declined in the postprandial period (P=0.003) but to a lesser degree following the oat-rich meal (16% v 8%, P=0.008). CRP concentrations increased during the first hour following the standard test meal (by 0.3 mg/l (13%), P=0.021) but were unchanged by the oat-rich meal (P=0.13). There were no differences in the area under the curve for the glycaemic (P=0.25) or insulinaemic (P=0.12) responses to either meal.</p> <p>Conclusion A post-prandial inflammatory response is observed in subjects with type 2 diabetes, independent of post-prandial glucose or insulin levels. Importantly, this response appears attenuated when refined carbohydrates are replaced with oat products. These findings may have implications for dietary advice in type 2 diabetes regarding improvement in cardiovascular risk profiles.</p>	<p>Susan McGeoch</p>
<p>R5. HbA1c is a useful indicator of postprandial hyperglycaemia in diet-controlled type 2 diabetes</p> <p>Background Postprandial hyperglycaemia has been shown to predict the risk of cardiovascular disease. The International Diabetes Federation recommends that 2h post-meal glucose should not exceed 7.8 mmol/l(1). Many patients with type 2 diabetes are managed in primary care and HbA1c alone is often used to monitor glycaemic control. There are few data regarding the extent of postprandial hyperglycaemia in those with well controlled type 2 diabetes.</p> <p>Methods 23 volunteers with type 2 diabetes managed by diet underwent a three day period of continuous blood glucose monitoring (CGMS) at home. Results Mean HbA1c was 6.7% (SD 0.55). Volunteers spent on average 534min (8.9h) with glucose greater than 8mmol/l in a 24h period, volunteers with HbA1c \leq6.5% spent less time with glucose greater than 8 mmol/l compared with those with HbA1c >6.5% (342 v 709 min, P=0.032). Regression analyses showed that HbA1c correlated strongly with time spent with glucose greater than 8 mmol/l (R²=0.60, P</p>	<p>Susan McGeoch</p>
<p>S1. Major, Minor and Total Lower Limb Amputation in the Borders Diabetic Population 2000-2009</p> <p>Lower limb amputation is one of the most dreaded complications of diabetes, associated with significant mortality and morbidity and represents a hard endpoint against which to measure outcomes of care. A recent study from Tayside (1)</p>	<p>Peter Leslie</p>

<p>described a significant reduction in incidence of amputation in the years 2000-2006.</p> <p>The aim of our study, using similar methods , was to ascertain whether this encouraging trend would be reflected in another Scottish health board area.</p> <p>Method Retrospective data on major (through or proximal to the ankle joint) and minor (distal to the ankle joint) amputation was collected from multiple sources (local diabetes register, Scottish Diabetes Survey, SMR-1 and GMS contract data) for the period January 2000 to September 2009.</p> <p>Results 86 procedures were identified in 62 patients. For all amputations the annual incidence per 1000 of the diabetic population fell from 4.04 in 2000 to 1.17 in 2009(linear regression $r=0.68$). The mean age at amputation increased from 64.7 years (56.7-72.7 95%CI) in 2000 to 79.8 years (73.4-86.2 95% CI $p=0.04$) in 2009, serum cholesterol fell from 5.6 mmol/l (4.5-6.8 95%CI) to 3.2 mmol/l (2.6-3.8 95% CI $p=0.001$) over the same period but there was no significant change in HbA1C concentration. The overall five year survival after amputation was 43.3%. Mortality was higher in males compared to females (67.5% and 35.0%), and those requiring major amputation compared to minor amputation were also more likely to die, (72.7% vs 37.0% at five years respectively). The poor five year survival was associated not only with major but also with minor amputations, perhaps indicating the Scottish Diabetes Survey should again consider including data on digital amputation.</p> <p>In conclusion these data confirm amputation rates are falling in another health board area, diabetic patients are surviving longer to first amputation and this may be linked to aggressive cardiovascular risk factor management. Reference 1. Scofield et al Diabetic Medicine 2009(26); 773-777 (347 words)</p> <p>S2 Exenatide with insulin. Is it safe?</p> <p>Aim: Exenatide, an incretin mimetic is a new class of medication which has been approved by NICE for use in Type2 diabetes in conjunction with oral hypoglycaemic agents. It is not yet licensed to be used with insulin however in practice many centres are using it in conjunction with insulin. NICE recommend use of Exenatide if BMI >35, inadequate glucose control (HBA1C>7.5%) with oral agents or specific psychological, physical or biochemical problems arising from weight gain.</p> <p>Method: We evaluated a sub group of 31 patients on exenatide and insulin as a part of our wider retrospective audit on patients taking exenatide. The case notes were reviewed and their medications, BMI and HBA1C documented before and after starting on exenatide.</p> <p>Results: Total 31 patients were audited, 53% male & 48% female. 72% of them were started on exenatide due to BMI >35 & 59% due to both raised BMI and poor glycaemia control. The average age was between 50-70yrs.37% of the patients were on BD insulin, 47% on basal bolus regime and 16% on once a day supplemental insulin. BMI and HBA1C improved in 71% & 52% of patients respectively, however in 29% there was no change in the BMI & HBA1C.More importantly addition of exenatide with insulin did not cause an increase in the BMI of any patient.</p> <p>Discussion: The incretin-based therapies represent a new potential goal-oriented</p>	<p>S Shikoh</p>
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<p>treatment in type II diabetes. Exenatide lowers blood glucose through enhancement of glucose-dependent insulin secretion, suppression of excess glucagon secretion, reduction of food intake and slowing of gastric emptying. In our audit exenatide improved glycaemia control and BMI in majority of the patients and its combination with insulin did not produce any side effects. Moreover these patients did not require additional monitoring. However our sample size was very small and further studies are needed to evaluate the combined treatment. It is suggested that patients should be carefully monitored if they are on combination treatment.</p>	
<p>I3. Patients' views on how useful it is to receive a copy of a GP letter after attending a diabetes outpatient appointment.</p> <p>Aims Sending a copy of a general practitioner (GP) letter to patients after a hospital outpatient appointment has been the practice of some doctors for many years, and was also more recently suggested as part of the NHS plan. This study aims to assess the benefits of this practice in a diabetes outpatient department and in particular will examine the level of patient understanding of the letter and whether provision of a glossary sheet improves understanding.</p> <p>Methods 300 questionnaires were posted out to randomly selected patients that attend a diabetes outpatient department. Data collected was analysed and tabulated for statistical analysis.</p> <p>Results Of patients that responded, 88% (95% CI: 82.0% - 94.0%) found the letter useful and 93% (95% CI: 88.6% - 97.4%) had a good understanding of the letter. An association existed between reading the glossary sheet and increased understanding of certain medical terms, for example TSH (thyroid stimulating hormone) and Free T4 ($p=0.025$). However, only 48% of patients receive the glossary sheet at their appointment.</p> <p>Conclusions Sending patients a copy of a GP letter is a worthwhile use of resources, as most patients find the letter useful. Understanding of the whole letter for most patients is adequate, but changes to the content of the glossary sheet and its distribution need to be addressed.</p>	<p>Jane Sehgal</p>
<p>R6 Study of protein biomarker for diabetes mellitus type 2 and role of high dose thiamine on their levels</p> <p>Background: This research work describes the levels of protein biomarkers specific to diabetes mellitus type 2 and effect of high dose thiamine on these levels.</p> <p>Methods: Type 2 diabetic patients, age and sex-matched normal healthy controls were recruited from Sheikh Zayed Hospital, Lahore, Pakistan. Plasma proteins were analysed by 2-D liquid chromatographic system in which samples were initially fractionated by chromatofocusing and the selected fractions were further analysed by reverse-phase chromatography. The proteins which showed variation between test and control samples were identified by MALDI TOF analysis. Analysis of all the samples belonging to the control, placebo and thiamine treated groups were then analyzed for the four proteins which were found to vary, by ELISA.</p> <p>Results: Levels of apolipoprotein A-I was found to decrease by -6.4 % while apolipoprotein-E, leptin and C reactive protein (CRP) were found to increase by</p>	<p>Samren Riaz</p>

<p>+802, +218 and +872 %, respectively in the diabetic patients as compared to the controls. The level of CRP decreased by 63% after thiamine therapy as compared to the controls and the placebo while other protein markers did not show a significant change after the therapy.</p> <p>Conclusion: Since CRP level variation has been reported in other pathological states, role of thiamine may have a significant bearing on the prognosis of such diseases.</p> <p>S3 How adolescents with diabetic ketoacidosis are treated in Scotland</p> <p>Background: Diabetic Ketoacidosis (DKA) is a life threatening complication of Type 1 diabetes. It can occur at diagnosis or following insulin omission or intercurrent illness. A feared complication in adolescents is cerebral oedema which occurs in 1% of cases with a mortality of 40-90%. Although the pathogenesis of cerebral oedema appears to be multi-factorial, there is concern that there may be an iatrogenic component.</p> <p>Aim: This survey was to determine how adolescent patients with DKA are treated in Scotland.</p> <p>Method: We conducted telephone interviews with the nurse in charge of all the Scottish A&E departments using a pre-designed questionnaire. We requested that a copy of any protocols used were faxed to allow for comparisons.</p> <p>Results: 24 A&E departments were contacted. In all hospitals patients have treatment initiated in the A&E department although cut-off ages varied for transfer to adult or paediatric services thereafter. One department denied any cases of adolescent DKA so was discounted. 14 departments used paediatric protocols for patients under 16 years, 8 used adult protocols for all cases of DKA and 1 hospital denied a protocol for either. 12 of the 14 paediatric protocols were based on the patient's weight. The main difference between paediatric and adult protocols was in the insulin infusion rate. 8 paediatric DKA protocols were sent to us; these were either local protocols or were based on the BSPED protocol. The main difference was in the rate of insulin infusion, which varied between 0.03 and 0.1 units/kg/hour. 12 departments denied having specially trained staff in the hospital to contact if further advice was required.</p> <p>Discussion: This survey showed that DKA in adolescents is a relatively infrequent presentation in A&E departments in Scotland and that protocols are not available in all departments. The protocols in use differ mainly in the insulin infusion rates recommended.</p> <p>Conclusion: Because of concerns relating to iatrogenic contribution to cerebral oedema in the management of DKA in young people, a standard, nationally agreed protocol may improve the management of these patients.</p>	<p>Laura McLaren</p>
<p>R7 Estimated lifetime cognitive change and its relationship with diabetes health, general health and well-being in older adults with type 1 diabetes: preliminary results</p> <p>Background: Specific impairments in cognitive function have been identified for individuals with type 1 diabetes mellitus (T1DM) in comparison to healthy controls. While maintenance of optimal HbA1c is key in preventing retinopathy, nephropathy and neuropathy, the effect of long-term blood glucose control on</p>	<p>Harriet Johnston</p>

<p>cognitive function is unclear as the majority of studies are based only on current or very recent glycaemia.</p> <p>Purpose: To determine the relationship between long-term blood glucose control, other diabetes factors (including hypoglycaemia), general health factors, psychological and personal variables with an estimate of lifetime cognitive change in an older population with T1DM. This preliminary analysis presents data from the initial participants recruited.</p> <p>Methods: 30 adults with T1DM for 10 years or more all over 45 years of age completed cognitive assessments, psychological questionnaires and interviews in conjunction with regular secondary care review. Estimates of premorbid IQ (National Adult Reading Test : NART) and current IQ (Raven's Standard Progressive Matrices) were used in a regression analysis to provide an estimate of cognitive change. Long term clinical data, including serial HbA1c, were extracted with informed consent from SCI-DC. Previous HbA1c values were used as an estimate of mean long-term glycaemia (all years), previous glycaemia (first 5 years) recent glycaemia (last 5 years) and current glycaemia (at time of testing).</p> <p>Results: In univariate analysis, higher mean long-term glycaemia ($r=-.37, p=.046$) and previous glycaemia ($r=-.46, p=.012$) were significantly correlated with a greater degree of estimated cognitive change. However as older participants also had higher blood glucose values, this relationship was no longer statistically significant when adjusted for age. Interestingly, both recent blood glucose and current blood glucose were not significantly related to cognitive function. Participant-reported history of hypoglycaemic events requiring assistance or hospitalization were not significantly related to estimated cognitive change.</p> <p>Discussion: These preliminary results support the SIGN recommendations of maintaining target blood glucose in the long-term and suggest this may help to preserve cognitive function. As we recruit additional consented participants, there will be greater power to verify preliminary results and explore other areas of cognition in relation to routinely-collected data readily-available via SCI-DC.</p>	
<p>14 DiabNet: Providing access to out of hours diabetes advice for families with children with diabetes</p> <p>The purpose of the DiabNet Managed Clinical Network (MCN) is to provide co-ordinated, consistent and high quality care in accordance with published guidelines for children and young people with Type 1 diabetes mellitus across NHS Fife, NHS Forth Valley and NHS Tayside. The Scottish Diabetes Action Plan (2006) tasked Managed Clinical Networks with putting in place plans to improve access to out of hours diabetes advice for families with children with diabetes in order to reduce the number of unplanned admissions for medical emergencies.</p> <p>DiabNet has provided an out of hours helpline for children with diabetes and their families since 2000. The service is operated by the Diabetes Specialist Nurses from each of the localities within DiabNet during 07:00- 09:00 and 18:00-23:00 Monday to Friday and 07:00- 23:00 weekends and all public holidays. Advice is given according to agreed guidelines. Use of the helpline is regularly monitored looking at the number of calls received, peak times, reasons for calls and outcomes of calls. The most frequent reason for calling the helpline is for advice on sick days, ketones and high blood sugar levels. In addition the helpline can provide valuable support for the newly diagnosed child with diabetes, facilitating home-based management, and also specialist advice for children starting insulin</p>	<p>Elaine Wilson</p>

<p>pump treatment.</p> <p>The number of children and young people with diabetes cared for within DiabNet has seen a 30% increase over the last nine years to 489 in 2008-09. Despite this increase in numbers the rate of hospital admissions for acute complications of diabetes in patients with established diabetes has steadily reduced over the years. The number of admissions for DKA per 100 patients has reduced from 17 in 1999/2000 to 4 in 2008/09. The number of admissions for Hypoglycaemia per 100 patients has reduced from 6.4 in 1999/2000 to 1.7 in 2008/09.</p> <p>S4 A study of lower limb risk factors for falls in patients with DM.</p> <p>Background: People with Diabetes Mellitus (DM) are at an increased risk of falling in comparison to those without DM. Falls constitute a significant public health burden and result in substantial economic cost. Predicting which patients are at risk of falling is challenging. This study aimed to establish lower limb risk factors for falls in patients with DM.</p> <p>Methods: Sixty patients with DM, over 55yrs were recruited from the Southern General Hospital, Glasgow. 'Fallers' were individuals who reported at least one fall in the last year. The following risk factors were assessed; neuropathy, foot deformity, balance and gait, ankle muscle strength, footwear and gait. Logistic regression analysis was used to identify the variables most predictive of falls.</p> <p>Results: Thirty five percent (n=21) of the sample had fallen. Eighty-six percent (n=18) of fallers and 56% (n=22) of non fallers had peripheral neuropathy. 'Fallers' walked with a slower velocity (F= 78.46 cm/s, NF=108.46 cm/s; p</p> <p>S5 Are lower limb risk factors for falls comparable in the diabetes and non diabetes population?</p> <p>Background: Falls constitute a significant public health burden and people with Diabetes Mellitus (DM) are at an increased risk of falling. This study aimed to establish whether lower limb risk factors for falls were comparable in the DM and non DM population.</p> <p>Methods: 60 DM patients, over 55 yrs were recruited from the Southern General Hospital, Glasgow and compared to a convenience sample of 19 control participants without DM. 'Fallers' reported at least one fall in the preceding year. Neuropathy, foot deformity, balance and gait, ankle muscle strength were assessed. Logistic regression analysis identified the variables most predictive of falls.</p> <p>Results: 35% (n=21) of the DM group and 14% (n=4) of controls had fallen. Participants with DM had decreased walking velocity (0.98m/s) compared to controls (1.3m/s) (p< 0.001), with shorter steps than control "fallers" (p< 0.001). DM 'non fallers' walked slower (p< 0.005) with increased step time than control 'non fallers'. Compared with DM 'non-fallers' DM 'fallers' walked with decreased velocity (F = 0.78 m/s, NF = 1.1m/s; p</p> <p>S6 A comparison of a 10 week Nintendo Wii Fit programme and a 10 week group exercise class in altering falls-related risk factors in individuals with diabetes.</p>	<p>Claire MacGilchrist</p> <p>Claire MacGilchrist</p> <p>Claire MacGilchrist</p>
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Background: We recently identified that decreased ankle muscle dorsiflexion, and decreased gait velocity were the main predictors of falls in older people with DM. This study aimed to compare the effects of a 10 week Nintendo Wii Fit programme, a 10 week group exercise class and a control group (no exercise) in altering these falls related risk factors in individuals with DM.

Methods: 21 participants with DM, over 55yrs (mean age 70) were recruited from the Southern General Hospital, Glasgow. Subjects who had not sustained a fall in the previous year but demonstrated to be at future risk of falls were included. Participants were allocated to a twice weekly group exercise class (n= 7), an individual, supervised twice weekly Wii fit programme (n= 6), or the control group (n=8). Both exercise and Wii Fit programmes contained a warm up, exercises to improve lower limb strength and balance and cool down.

Results: Preliminary results (n= 16) demonstrated both the exercise and Wii Fit groups improved mean ankle dorsiflexion muscle strength over the 10 weeks, however the effect was only statistically significant for the exercise group (Exercise group; 3.1kg (SD 0.6) at baseline and 5.5kg SD (1.9) at follow-up; p = 0.01 and Wii Fit group 2.7Kg SD (0.9) at baseline and 3.8Kg SD (1.7) at follow-up; p = 0.08). The control group demonstrated no change in ankle muscle strength (p > 0.05). The exercise class showed an increase in mean walking velocity (baseline = 117.8 cm/s SD 20.8, follow-up = 128.8cm/s SD 15.8) however this was not statistically significant (p = 0.3). No significant differences were present for changes in walking velocity for the Wii Fit (p = 0.89) or control groups, (p = 0.74).

Conclusions: Individuals with DM who followed either a 10 week group exercise or Wii Fit programme demonstrated improvements in ankle muscle strength, and those following the exercise class also increased their walking velocity. As both of these risk factors are suggested to be predictors for falls in patients with DM, group exercise classes may be an appropriate intervention to target these key risk factors for falls in this patient group.

15 NHS Tayside Diabetes Managed Clinical Network - Ten Years On. A 'single system' approach to integrated diabetes care.

NHS Tayside Diabetes Managed Clinical Network has been evolving for the past 10 years, seeking to pioneer an integrated 'single-system' approach to diabetes care. Its Strategy set the framework for targeted service development to manage increasing clinical demands. This is evidence, needs and 'clinical governance' based, data rich, patient and outcome focused, and supported by the clinical and patient community. It seeks develop support mechanisms for professionals and patients and describe new ways of working including the key development of an Integrated Care Pathway. Despite a 104% increase in prevalence, control measures (cholesterol, glycated haemoglobin and blood pressure) have shown sustained improvements and mortality has steadily fallen.

Areas of activity include developments in patient education, clinical guidelines, foot assessment, podiatry pathways, retinopathy screening, insulin intensification, transitional care, dietetic standards, inpatient care, professional education and a GP Local Enhanced Service. Our role has expanded to include prioritisation and shared strategy making, managing demand, engaging users in planning and review of services and strategic commissioning. Our Website provides a wide range of information to clinicians and patients about the service including guidelines, protocols and Patient Information Leaflets. Tayside's DARTS IT

Alistair
Emslie-Smith

<p>opportunities.</p> <p>Method: The programme was offered to groups of Type 2 patients, diagnosed more than one year from four urban/rural practices. Each group comprised two sessions, delivered jointly, in a local setting, by a dietitian and diabetes adviser. The format was informal, encouraged participation and discussion of personal experiences. Each group identified their own learning needs at the beginning, so specific issues of individual concern were addressed. The programme also offered the opportunity to discuss: What is diabetes, Managing diabetes, Nutrition/Lifestyle issues, Driving, Travel, Footcare, Medications/prescription exemption, Monitoring and taking action, Risks and long term complications. Practical interactive learning activities were included throughout the sessions. The Dietetic Service redesigned its service delivery to allow participation. Nursing and administration time was supported by an educational grant from Takeda UK Limited.</p> <p>Results: Uptake: 385 patients invited. 126 patients (32.7%) attended. Feedback was overwhelmingly positive with participants finding the sessions very helpful, supportive and informative. The majority of participants gained practical information and understanding to help them self manage their diabetes and planned lifestyle changes. Many stated meeting others with the same condition was very beneficial. Participants' comments included: 'Just to talk about what's bothering me made a difference' 'Answered many questions without making me feel stupid about asking them' 'Would have liked this 5 years ago' 'Would advise others to attend' Sessions mean so much more than simply handing over a leaflet. 'Very informative. No-one to speak to at home.'</p> <p>Conclusion: Programme compliments and extends existing education initiatives which encourage and support confidence in self management. Evaluation comments from patients and healthcare professionals demonstrated this to be a much appreciated initiative.</p> <p>I6 Is school a barrier to intensification of insulin therapy in children with type 1 diabetes?</p> <p>Objectives: To review the use of insulin therapy in school by children and adolescents with Type 1 Diabetes (T1D) in Tayside and NE Fife, an area covered by 2 full time equivalent Paediatric diabetes specialist nurses (PDSN).</p> <p>Background: Current guidance (NICE, ISPAD) states that intensive insulin therapy (IIT) be offered to children and young people with T1D. This requires a lunchtime insulin dose. In the UK there is reported resistance to this insulin regimen, particularly for primary school children.</p> <p>Methods: We reviewed the number of children in our clinic on IIT and estimated the number of episodes of insulin administration in schools across 4 education authorities, in the last year. To implement IIT an individualised management protocol is drawn up (as per national guidance*) written jointly by parents, PSDN and school staff. The PDSN role is flexible, involving education of school staff using 1 to 1, or group work. Schools delegate staff to perform duties. Emphasis is on communication, reassurance on legal aspects (including indemnity) and reducing need for staff to make clinical decisions. Management advice is available from parents and PDSN.</p>	<p>Vicky Alexander</p>
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<p>Results: 215 children of 230 (93%, aged 3-18yrs) were on IIT (n= 182 MDI; n= 33 CSII) including 67 of 73 (92%) aged 3-12yrs (March 2009). The area has 242 schools of which 127 had input from PDSN because of at least 1 child with diabetes. In addition the 9 youngest children attend pre-school nurseries. Using the above figures, we estimate that in the last year there were potentially c.43,000 episodes of insulin administration in a nursery/school setting. There were no adverse events.</p> <p>Conclusion: With a detailed, individualised education and support programme for parents, pupils and school staff, IIT (MDI or CSII) can be delivered successfully and safely in schools, with no extra health staff on site. National Guidelines assist in policy implementation. Over the next year we intend to assess how insulin is administered in schools in detail. *Administration of Medicines in Schools Scottish Executive 2001 Word count 344</p> <p>PC2 “Wish You Were Here” A Novel Approach to Diabetes Education in Care Homes</p> <p>Aims and Background: In Lothian, there are 118 registered care homes for older people and those with mental health problems. The Lothian Care Home Subgroup of the Managed Clinical Network devised a simple educational tool to improve the diabetes knowledge of the staff.</p> <p>Method: Four colourful seasonal postcards were sent out to care homes over a year. Each described a diabetes scenario relating to ‘Betty’. Each postcard asked 3 questions to prompt thought and discussion for staff members and, on the back, included suggested action points and answers relating to each question. A questionnaire measuring the usefulness of the project was sent out and the results evaluated.</p> <p>Results: From the 37 (31%) questionnaires returned, 29 (78%) care homes had received the postcards, 6 (16%) had not and 1 (3%) did not know. 30 (81%) found the postcard initiative to be useful. 24 (65%) felt that staff awareness and knowledge of diabetes had been increased, 1(3%) did not believe they had increased their knowledge and 5 (14%) were unsure. 30(81%) thought it was an effective method of communication to care homes, 1(3%) did not and 1(3%) was unsure. 10 care homes (27%) had changed their current practice, 18(49%) had not and 3 (8.1%) were unsure but indicated that they had no diabetic patients at the time.</p> <p>Conclusion: Short bursts of simple education sent to care homes in the form of easy to read and colourful postcards has been an effective way of improving the diabetes knowledge of care home staff.</p>	<p>Joan Allwinkle</p>
<p>S7 Streamlining the provision of information for individuals considering insulin pump therapy.</p> <p>Background: Individuals with type 1 diabetes treated by continuous subcutaneous insulin infusion (CSII) therapy have almost doubled in Scotland in the eighteen month period from September 07 to February 09. The revision of the National Institute of Clinical Excellence Guidelines 2008 allows greater opportunity for securing the provision of funding CSII. In clinical practice and media circles the profile of CSII therapy has been raised significantly and as a consequence the demand is greater. Frequently patients, who are referred for this therapy, or wish to be referred, are uninformed of what it actually entails.</p>	<p>Liz Mackay</p>

Aim: To economise on Diabetes Nurse Specialist (DSN) time in assessing the suitability of patients for CSII therapy.

Method: Current patient information was assessed by two DSNs in different health boards. It was recognised that it was insulin pump company specific. Anecdotal comments from patients were considered regarding their misconception about pump therapy. Funding was sought and approved by the Scottish Diabetes Group to produce a patient education leaflet that was subjected to peer review.

Result: A patient education leaflet titled 'Introduction to Insulin pump Therapy (Also known as CSII)' has been published. This discusses the very basics of CSII therapy and the necessary commitment and motivation required by the individual considering it. It also guides the reader to specific websites for more detailed information.

Conclusion: This leaflet will provide the first stage in determining an individual's suitability for CSII therapy, pre-empt the need for an unnecessary DSN consultation, and add value to the assessment process.

R9 Effects of high dose oral vitamin D on markers of vascular health in type 2 diabetes – a randomised controlled trial

Dr Witham

Aims / objectives Low vitamin D levels are common in patients with type 2 diabetes, and are associated with hypertension and increased risk of cardiovascular events. This study aimed to compare the effect of 100,000 and 200,000 unit doses of vitamin D3 on blood pressure, endothelial function and markers of glycaemic control in type 2 diabetes over a 16 week follow up period

Methods Randomised, placebo controlled, double-blind trial. Patients with type 2 diabetes and baseline 25-hydroxyvitamin D levels <100nmol/L were enrolled from community and hospital-based diabetes clinics in Tayside. Participants received a single oral dose of either placebo, 100,000 units vitamin D3 or 200,000 units vitamin D at baseline. Blood pressure, endothelial function measured using flow-mediated dilatation of the brachial artery, B-type natriuretic peptide, cholesterol, HOMA IR, HbA1c, PTH and 25 hydroxyvitamin D levels were measured at baseline, 8 weeks and 16 weeks.

Results 61 participants were randomised. Mean age was 65 years and 20/61 (33%) were female. Mean blood pressure was 145/81 mmHg and the mean baseline 25-hydroxyvitamin D level was 45 nmol/L. After adjustment for baseline blood pressure and baseline 25OHD level, both doses of vitamin D reduced systolic blood pressure compared to placebo at 8 weeks; -8.2 mmHg (95% CI -16.2 to -0.2, p=0.04) for 100,000 units vs placebo, and -9.3mmHg (-17.5 to -1.1, p=0.03) for 200,000 units vs placebo. Improvements in blood pressure were attenuated by 16 weeks despite 25 hydroxyvitamin D levels remaining elevated in the intervention groups. Endothelial function, insulin resistance (HOMA IR) and HbA1c did not improve with either dose of vitamin D. B-type natriuretic peptide levels fell in both intervention groups relative to placebo, reaching significance for the 200,000 unit dose at 16 weeks (+4 pg/ml vs -17 pg/ml, p=0.01)

Conclusion High dose vitamin D improves blood pressure and B-type natriuretic peptide levels, but not endothelial function, insulin resistance or glycaemic control, in patients with type 2 diabetes.

<p>I7 Patient acceptability of developing a integrated care model using tele-video clinic for diabetes in the Orkney islands</p> <p>Background: There is a lot of interest in the use of telehealth initiatives to provide care for patients living in remote and rural communities. A new teleconsultation service for delivering specialist diabetes care was set up for the Orkney Islands in September 2008¹. We have developed an integrated care model using tele-video clinic for obtaining specialist diabetes opinion.</p> <p>Methods: 35 patients were seen at the tele-clinic in 90 clinical sessions since start of the service. A postal questionnaire was designed to assess the patient's views on and satisfaction with the clinic.</p> <p>Results: Out of 35 patients, 24(69%) were type 1 and 11(21%) had type 2 diabetes mellitus. 23(66%) of them were male and 12(24%) females. Mean age 44 years (range 16-77 years). 2(5%) patients were diagnosed to have Type 1 diabetes within the last 12 months. 24(69%) of the patients were referred for deteriorating glycemic control , 4(11%) transitional care advice, 1(3%) antenatal, 5(14%) recurrent hypoglycaemia and 1(3%) skin lesion. Eighteen patients responded to the postal questionnaire. 15 (83%) patients agreed having confidence in the way the consultant addressed their problems. 16(89%) patients were able to say all that they wanted to say during the consultation. Only 1(6%) worried that others might be listening or watching the consultation. Nine (50%) patients felt that they were able to understand their illness better than before and 10 (56%) felt that they could cope with their illness better after the teleconsultation. 10 (56%) patients felt they were able to cope with their life better than before the consultation.</p> <p>Conclusion: Results shows that patients found the use of tele video clinic acceptable for obtaining specialist diabetes opinion.</p>	<p>June Bacon</p>
<p>P3 Growing points for a transitional diabetes service in Grampian</p> <p>Background: In 2007, the Grampian Diabetes MCN secured funding to permit development of improved support for patients making the transition from paediatric to adult services. To inform deliberations on the future shape of our provision, we developed a questionnaire seeking the opinions of those attending our current Young Persons' Clinics (YPCs) in Grampian about the present set-up and their suggestions for improvement.</p> <p>Method: The questionnaire was available in paper format and covered areas including clinic venue and environment, contacting the diabetes team, preferred topics for learning, as well as some open questions seeking free text responses. Following distribution of a pilot version (n=30), a few items were modified to improve clarity in the final 28 items questionnaire. With the aim of obtaining responses from more than half of the 160 attending YPC's questionnaires were handed out for voluntary completion to all those attending clinic over a three month period, of the 97 attendees receiving questionnaires 69 (71%) were completed (45% of YPC attendees). Respondents were aged 14-20 yrs (mean 16.5yrs) and 37 of whom were female. There were no differences in gender, education, employment or living arrangements between respondents and the overall clinic population. Data analysis was facilitated by use of optical marking technology.</p> <p>Results: A significant number highlighted that the clinic was at a suitable venue 51 (74%) and time for them to attend 57(83%) and 40 (58%) felt that having</p>	<p>Edna Stewart</p>

<p>diabetes staff who were supportive but not critical was very important when helping them set achievable goals. Several respondents made informative free text comments, e.g.: 'Great service, no problems ' 'Overall, not too bad!' 'I don't feel treated like an individual' In terms of aspirations for the future, a number suggested that better access to an exercise counsellor (n=42) or a psychologist (n=37) would be desirable.</p> <p>Conclusion: In summary, the level of engagement by those attending our YPCs in this information gathering process was encouraging and the findings useful in taking forward service development. Continuing shared ownership between users and providers of our developing transitional service will be of considerable importance.</p> <p>R10 Is metabolism of glucose and amino acids affected similarly in subjects with impaired fasting glucose (IFG) and/or impaired glucose tolerance (IGT)?</p> <p>Background Insulin regulates tissue protein metabolism including skeletal muscle, which is also a major contributor to post-prandial glucose disposal. Hypothesis: As insulin sensitivity of both glucose and protein metabolism share certain common signalling pathways, a dysregulation in insulin sensitivity to glucose will cause a comparable change in amino acid disposal.</p> <p>Methods Nineteen volunteers (11 men, 8 women; mean age 60.1 years (52-68 years)) with IFG or IGT underwent a baseline hyperinsulinaemic-euglycaemic-euaminoacidaemic clamp to assess insulin sensitivity. The relationship between both glucose and amino acid disposal and other variables were investigated using regression analyses. In addition, measurements of endogenous glucose production (EGP) and whole body protein breakdown were determined with stable isotope tracers.</p> <p>Results Mean glucose disposal was 5.77mg/kgFFM/min (Range: 1.74-12.52mg/kgFFM/min) and mean amino acid disposal was 1.41mg/kgFFM/min (Range: 0.67-2.04mg/kgFFM/min). Glucose disposal was inversely related to weight and to 2 hour venous glucose (75g OGTT), $R^2 = 0.41$ ($p=0.03$) and 0.31 ($p=0.006$) respectively. Amino acid disposal was not related to either variable. There was no overall relationship between glucose and amino acid disposal. Individuals varied in their responses; some had low glucose and high amino acid disposal, while in others, both disposal rates were either high or low. Pre-clamp mean EGP was 51.9 mmol/h (Range: 36.5-92.5mmol/h) and mean protein breakdown was 9.4 mmol leucine/h (6.4-16.3 mmol/h)</p> <p>Conclusions The hyperinsulinaemic-euglycaemic clamp is a well recognised tool in the assessment of insulin sensitivity; use of an amino acid clamp is less common. The current findings have not demonstrated a close link between glucose and amino acid disposal suggesting that the insensitivity of insulin to glucose in subjects with IFG or IGT occurs in a different part of the signalling pathway to that of protein metabolism. These are baseline data as part of a study assessing the effect of long-term fish oil supplementation on insulin sensitivity as measured both peripherally through disposal by muscle and at the liver by measuring EGP.</p>	<p>Louise Clark</p>
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<p>P4. Developing services in partnership with patients</p> <p>The Lothian Diabetes Representative Group is a well-established patient group, formed in 2002 by a group of diabetes patients following a patient involvement initiative held at Murrayfield Stadium. From its inception the group has been supported by Lothian Health Board and the Lothian Diabetes Service Advisory Group (LDSAG) to become more involved in providing a patient voice.</p> <p>With the formation of the Diabetes MCN in 2003, the group was more formally established, with a budget to support its work. It now provides a patient voice in diabetes clinical areas, and four representatives sit on the LDSAG, which has developed into the multidisciplinary group determining strategic direction for the MCN.</p> <p>The group's energies have been applied to running a local annual diabetes patient and carer educational conference which attracts around 120 participants. The group determines the programme of speakers and workshops, with administration being provided by the MCN office.</p> <p>Members also participate in many of the Diabetes MCN subgroups – Diabetic Retinopathy Screening, Clinical Governance, Professional Education, Patient Education, Podiatry, Dietetic, Pharmacy Services and the MCN Steering Group – and coordinate the local Buddy service, which provides peer support for those living with diabetes. Many of the LDRG members are also involved in national initiatives – the SIGN 55 review, Diabetes Care Focus Group activities, the Medical Advisory panel on Driving and Diabetes, Diabetes UK Advisory Council. They also provide a diabetes voice on other focus groups, panels and patient involvement initiatives.</p> <p>Members of the group contribute to local and national consultation exercises, have represented the diabetes community at the Cabinet Secretary's Annual Review and contribute to the 'patient experience' session on NHS Lothian's twice-yearly accredited diabetes course for health professionals.</p> <p>The LDRG has firmly established itself as an integral part of the diabetes MCN, with its lay members working in partnership with healthcare professionals in the diabetes multidisciplinary team to maintain and improve care for the 31,000 people with diabetes across Lothian.</p>	<p>Mary Scott</p>
<p>18. An Introductory Course on Teaching & Training for Diabetes Health Care Professionals in Grampian 2006-9</p> <p>Background</p> <p>Releasing the potential for diabetes self-management is an issue of ever-increasing importance as clinical services strive to accommodate the rising disease prevalence and consequent demands. Assumptions are made about the preparedness of diabetes service providers to contribute effectively to this agenda but little has been available in the way of training for such roles. It was for this reason that the above course was developed with the intention of improving services for patients by resourcing their health care professionals.</p> <p>Aim</p> <p>The course was designed to enable a small class of diabetes health care professionals from a variety of backgrounds to increase their understanding and confidence in providing patient education.</p>	<p>Harriet Robertson</p>

Methods

In a non-clinical environment, during 2 full and 2 half-days over 6 weeks, a class of up to 12 health care professionals attended a series of workshops run by a small faculty of experienced clinical educators with ongoing commitments in clinical diabetes. The use of various formats (discussion, facilitated and unfacilitated group-work, etc.) used in conjunction with a variety of media (DVD, role-play, Conversation maps etc.) allowed the faculty to address and model a variety of educational issues and techniques. Practical sessions were supported by some theoretical background on topics such as experiential learning, giving feedback and preferred learning styles.

Results

This course has recently had its 4th annual run and has been completed by 44 diabetes health care professionals (8 dieticians, 8 podiatrists, 8 specialist nurses, 7 diabetes ward/clinic nurses, 5 consultant diabetologists, 4 specialist registrars, 2 medical officers, a diabetes fitness instructor and a pharmacist). Evaluation showed that it has been considered a worthwhile experience by delegates in increasing their awareness of teaching skills and methods which has, in turn, encouraged many to reflect on and modify their accustomed practice with individual patients and groups.

Conclusion

Investment in training health care professionals in the facilitation and support of patient education has considerable potential for enhancing patient care and self-management.

S8 The Effect of Exenatide on weight and HbA1c as addition or substitution for other medications in Type 2 Diabetes

Chris Smith

Introduction Clinical trials have shown reductions in weight and HbA1c on adding exenatide to existing therapy but promising results have been also noted when agents have been substituted with exenatide. We observed the differences in outcomes (on weight and HbA1c) between patients in whom exenatide was either added to or substituted for an existing agent.

Methods Data from 33 patients who had started byetta treatment (10mcg bd) was retrospectively analysed. 17 patients had byetta substituting an existing treatment ("S" group) and 16 had it in addition to existing therapy ("A" group). We looked at mean change in weight and HbA1c at 3, 6 and 9 months. Comparison carried out with the unpaired T test.

Results Weight loss was significantly greater across 9 months for substitution group. Table 1. Comparison of weight change between groups Group "A" Group "S" Mean weight 0/12 103.6±19.0kg 111.2±27.3kg Weight change 3/12 -2.0±2.5kg -4.6±3.1kg P value 0.015 Weight change 6/12 -3.5±4.5kg -8.0±4.6kg 0.011 Weight change 9/12 -3.9±5.6kg -8.6±3.9kg 0.012 HbA1c reduction was significantly greater for addition group until 9 months. Table 2. Comparison of HbA1c change between groups Group "A" Group "S" Mean HbA1c 10.5 1.3% 10.3±1.4% HbA1c change 3/12 -1.6 0.9% -0.4±1.5% P value 0.010 HbA1c change 6/12 -1.6 1.0% -0.3±2.1% 0.036 HbA1c change 9/12 -2.1 1.3% -1.1±2.1% 0.107

Conclusion Our results indicate when substituting byetta for weight promoting

<p>oral therapy, weight reduction is greater than when added onto existing therapy. This weight benefit was consistent over 9 months. Over 6 months, the substitution strategy was less effective at reducing HbA1c. However after 9 months this difference was not significant. This is of clinical significance as NICE has recommended "treatment with exenatide is continued only if HbA1c concentration is reduced by at least 1% and a weight loss of at least 3% is achieved within 6 months." Our results would imply that a trial of 9 months should be given to see if HbA1c falls especially when treatment strategy involves substitution therapy.</p>	
<p>R11. Development of a method for the simultaneous assessment of glucose and amino acid disposal using a hyperinsulinaemic-euglycaemic-euaminoacidaemic clamp</p> <p>Background Several techniques are available for the evaluation of insulin sensitivity including the hyperinsulinaemic-euglycaemic clamp. Since insulin also regulates tissue protein metabolism including in skeletal muscle, which is a major contributor to post-prandial glucose disposal, we developed a method to assess simultaneously both glucose and amino acid disposal through the use of a hyperinsulinaemic-euglycaemic-euaminoacidaemic (HIEGEAA) clamp.</p> <p>Methods Nineteen fasting individuals with impaired fasting glucose or impaired glucose tolerance were cannulated in antecubital (infusion) and contralateral hand (retrograde, sampling) veins. Monitoring and adjustment of auxiliary infusions of dextrose (20%) and amino acids (Vamin 14; 10%) were performed every 5 minutes during a 3h continuous infusion of insulin (40mU/m².min⁻¹). Plasma glucose was targeted at ±5% of a value between 4.5–5.5mmol/l (based on fasting glucose) while plasma branch chain amino acids were maintained within ±10% of fasting values.</p> <p>Results For 16 HIEGEAA clamps, plasma glucose was maintained within 5% of target in 10 clamps (range 1.03-4.8%) with the remainder within 10% of target (5.9%, 7.3% and 9.8%). Sixteen amino acid clamps were within 10% of target (range 2.86-9.28%) with the remainder less than 12% (10.4%, 10.4% and 11.04%). The clamps were well tolerated by all subjects with occasional symptoms of light headedness which resolved on reclining the seating and without significant blood pressure changes.</p> <p>Summary/Conclusions Glucose clamps are a well recognised technique in the assessment of insulin sensitivity. Amino acid clamps are performed less often. Here, we have performed both clamps simultaneously with glucose and amino acid levels maintained within defined limits and with minimal adverse effects in human subjects.</p>	<p>Louise Clark</p>
<p>R8. A novel approach to an age-old problem</p> <p>Introduction Blood pressure is the most important modifiable risk factor in the prevention of macrovascular disease in patients with diabetes. Its measurement is notoriously variable making accurate diagnosis and management of hypertension problematic. Self blood pressure monitoring (SBPM) could be the answer.</p> <p>Aim To investigate the utility of SBPM in patients with type 2 diabetes.</p> <p>Methods All patients with newly diagnosed type 2 diabetes referred to Edinburgh Royal Infirmary are invited to participate in a group education session. After a brief tutorial during this session, patients are asked to monitor blood pressure at</p>	<p>Neil McGowan</p>

<p>home, twice daily, for one week. The mean self-measured BP was compared to “office” blood pressure taken at the first clinic attendance.</p> <p>Results Within this study, 73 patients have attended the group education session, mean age 59 (± 10) years, 45% male. Of the 73 patients, 86% (n=63) successfully completed a single week of SBPM, defined as >20 out of 24 possible valid BP readings.</p> <p>The mean clinic BP was 146/81mmHg ($\pm 16/16$) and mean SBPM 136/79mmHg ($\pm 14/11$), $p < 0.005$ for systolic and $p = 0.458$ for diastolic. 29% (n=18) demonstrated white coat hypertension, 8% (n=5) masked hypertension, 43% (n=26) hypertensive on both office and out of office BP measurement with the remainder normotensive by both methods.</p> <p>Discussion The mantra of self-management is engrained in diabetes care, long before publication of the Scottish Diabetes Framework Action Plan or <i>Delivering for Health</i>. Until now, self management has been “glucose-centric”.</p> <p>We have shown self blood pressure monitoring can be routinely employed in assessing patients’ blood pressure. We have also demonstrated the inaccuracy of routine clinic measurements. This is in keeping with published literature which states blood pressure status i.e. hypertensive or normotensive can be wrong in up to 69% of cases when based on a single reading. SBPM provides a robust mechanism for accurately assessing the greatest macrovascular risk factor in patients with diabetes and should become routine in all our patients.</p> <p>19. A Social Enterprise Model of healthcare delivery for people with diabetes</p> <p>Aim To develop and deliver a social enterprise model of healthcare delivery, which complements existing services, and allows re-investment back into the health and wellbeing of people with diabetes.</p> <p>Methodology Social enterprise is a business with social aims. The Centre of Health and Wellbeing, (CHWB) is a social enterprise company, with charitable status. It provides outreach health and wellbeing services to organisations for their employees helping those companies who are involved in Healthy Working Lives Awards. The services can also be delivered at management away days, team building events, conferences and trade shows. The surplus that is raised is then re-invested into the health and wellbeing of the local communities and in particular people with diabetes. A lifestyle intervention pilot for people with diabetes will be delivered using this surplus made from the business transactions.</p> <p>Results Twenty business events were delivered in the first year of trading. This allowed to 4 reinvestment events to be delivered. Two re-investment events were delivered in NE Edinburgh and SE Edinburgh to people with long term conditions where over 100 people attended. Other partners in this were the Big Lottery, Edinburgh Council and Dunedin Canmore Housing association. The third event was in partnership with Unison and delivered to NHS staff at the Royal Victoria Hospital. The final reinvestment was delivered to homeless people in Leith. A trend of people having high biochemical parameters was found in all of the events delivered. We are in the process of collecting all the biochemical data and will report fully after April 2010. All events have been independently evaluated and the feedback has been very positive.</p>	<p>Lubna Kerr</p>
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<p>Conclusions The key to the success of this proposal is gaining as much business as possible. We aim to increase focus on anticipatory care for people of all ages and show the amount of money that can be saved in the long term by this process. In England, NHS employees can set up social enterprise as part of their contracts and has been very popular. This is called the “right to request”. The question is when this will be available in Scotland?</p>	
<p>PC3 Can podiatrists impact on self-management for people with type 2 diabetes? Proposal for a multi-factorial randomised controlled trial</p> <p>Background Type 2 diabetes has reached epidemic levels in the UK. It is the principle reason for lower limb amputation, renal failure and blindness as well as a major cause of fatal heart disease. Effective management of the condition inevitably means good self management by people living with diabetes on a daily basis. Dietary changes to improve blood sugar (HbA1c) control provide ongoing challenges for both patients and health care professionals. Podiatrists are the most likely health profession to have regular consultations with diabetic patients, particularly once complications have developed. They are well placed to implement long-term support of self-management strategies based on a valid theoretical framework.</p> <p>Aims This research aims to assess the effectiveness of podiatrists implementing cognitive behavioural strategies with diabetic patients; to improve the quality of NHS care for people living with diabetes and to promote the use of collaborative person-centred consultations in daily healthcare practice.</p> <p>Methods Podiatrists, recruited from diabetic clinics in Scotland, will complete a cognitive behavioural intervention training programme delivered by a psychologist and a dietician. Over a 12 month period, they will implement interventions with diabetic patients to improve self-efficacy and dietary changes. Mixed methodologies will be used to ensure the effectiveness of the intervention is evaluated in its entirety. The biomedical outcome (HbA1c) will be monitored as part of usual care; Diabetes Quality of Life and Diabetes Treatment Satisfaction Questionnaires will be used at the baseline and completion points; process evaluation through interviews and focus groups will provide a picture of the way in which the interventions were used and experienced by both patients and podiatrists.</p>	<p>Michelle Dunphy</p>
<p>I10 Foot problems associated with diabetes are the largest single reason for diabetes patients being admitted to hospital in the United Kingdom</p> <p>The majority of non-traumatic lower limb amputations are preceded by foot ulceration and mortality is increased in those that have undergone limb amputation with a two-year survival rate of 50% It is widely recognised that podiatrists are essential in the management of the foot in the diabetes patient at all levels of the spectrum. This includes supporting the patient in self-management, prevention strategies in the high-risk foot and managing active foot disease.</p> <p>The challenges currently faced by diabetes foot services are set to intensify over the next few years, as the numbers of diabetes patients rapidly increase. The complications associated with diabetes, and the projected rise in the diabetes population, are major influences in driving changes within the National Health</p>	<p>Joanne McCardle</p>

<p>Service (NHS). Without careful planning of these services, the NHS will struggle to accommodate the burden of diabetes and associated foot problems.</p> <p>This poster discusses potential responses to this impending crisis, and through scenario planning and strategic analysis, aims to identify the most suitable, feasible and acceptable solution. It also addresses the most likely consequences of the options and the impact on diabetes foot services. The analysis concludes that by investing in our workforce now and in the future will have benefits for patients, services and clinicians. It suggests that developing the diabetes specialist podiatry workforce is the most logical way forward to ensure services are proactive and not reactive in the future. Although the models are based on NHS Scotland, these could be adapted to reflect commissioning bodies in the rest of the UK.</p>	
<p>S9 Does regular haemodialysis attendance compromise routine diabetes care?</p> <p>Introduction Accepted standards of care for people with diabetes are set out in the Scottish Intercollegiate Guidelines Network, Clinical Standards Board for Scotland and Scottish Diabetes Framework guidelines. There was a local perception that patients who had diabetes and were also on haemodialysis for end-stage renal failure might be missing out on aspects of this care. The aim of this audit was to assess if diabetic patients on haemodialysis were receiving standard diabetes care.</p> <p>Methods The case notes of all patients with diabetes receiving haemodialysis at the Borders General Hospital were examined during January-February 2010. Data were gathered retrospectively to determine if the following had taken place within the previous year: contact with a diabetes specialist doctor and nurse; measurement of HbA1c, total cholesterol (TC) and blood pressure (BP); screening for eye and foot complications; documentation of smoking status; and review of statin and aspirin use. Targets for HbA1c, BP and TC were defined as $\leq 7.5\%$, ≤ 5.0 mmol/l and $\leq 130/80$ mmHg respectively.</p> <p>Results Eleven patients were eligible for inclusion in this audit. 100% had had contact with either a diabetes specialist physician or nurse within the previous year (91% and 82% for each respectively). 100% had measurements of HbA1c, BP and TC from within the previous year, and all had had retinal screening or ophthalmology clinic review. 91% had had foot screening and/or specialist podiatry review. 100% had had smoking status documented. Target HbA1c $\leq 7.5\%$ was achieved, or the rationale behind a higher target documented, in 45%. The corresponding figures for BP $\leq 130/80$ mmHg and TC ≤ 5.0 mmol/l were 73% and 100% respectively. 82% were on a statin or had the rationale behind its non-prescription documented; the corresponding figure for aspirin was 64%.</p> <p>Conclusion Patients with diabetes on haemodialysis generally had contact with diabetes specialists and appropriate monitoring for cardiovascular risk factors and complications. Over half of patients failed to reach the HbA1c target – it is possible that in some of these patients higher targets would have been appropriate but documentation of any such decisions was not present.</p>	<p>Rachel Williamson</p>