

Diabetes: The need to take control

A report from the 3rd National Conference for Intermediate Diabetes Care Teams, with a special focus on the role of GPSIs, which took place on Wednesday 1 July 2009 at the National Motorcycle Museum, Birmingham. This meeting report was generated independently by the publisher and conference speakers, with whom editorial control rests.

Introduction

This conference, organised by the Primary Care Diabetes Society in association with *Diabetes & Primary Care*, aimed to stimulate debate among professionals involved in the care of people with diabetes – GPs, diabetologists, specialist and practice nurses and commissioners to name but a few. The speakers highlighted the day-to-day practical realities of intermediate diabetes care, and the clinical, organisational and political challenges they present. Topics covered at the event included exercise, fad diets, insulin initiation and bariatric surgery. This report presents a summary of the conference.

Session 1. Clinical priorities: What intermediate care needs to know

Anna Morton (Director, NHS Diabetes) opened the first session with a discussion on diabetes and NHS Health Checks, making the point that if people at risk of diabetes could be identified early, complications could be avoided and the seemingly inevitable increase in prescribing costs, referrals, and inpatient costs could be prevented.

NHS Health Checks is a single, universal, integrated health check for all people aged between 40 and 74 years that aims to measure the risk of cardiovascular disease, diabetes and chronic kidney disease; set out how to reduce risk or maintain low risk; and offer people a tailored package of prevention.

The future of diabetes care, Anna pointed out, is learning from these initiatives, putting patients first, working together, and using the tools that are available to create an efficient system.

The second talk of the session was delivered by Brian Karet (GPSI in Diabetes, Bradford), who began by discussing the chronic complications of diabetes – with some sobering statistics. For every 10 people with diabetes and microalbuminuria, and an average age of 55 years, two will die, two will suffer a stroke, two will have a myocardial infarction and one will suffer an amputation over a 13-year period if intensified and target-driven multifactorial

treatment is not delivered (Hilgers and Veelken, 2005).

Complications like microalbuminuria can be prevented with annual screening and tight metabolic control. In particular, tight blood pressure and glycaemic control are important for reducing the risk of developing complications such as cardiovascular disease, retinopathy and neuropathy. Data from the UK Prospective Diabetes Study (Holman et al, 2008) have shown that intensive glycaemic control not only reduces cardiovascular risk, but that the risk reduction persists, benefiting the person with diabetes for the rest of their life.

Comorbid conditions are also an important aspect of diabetes care that practitioners need to be aware of. In type 1 diabetes, such conditions include coeliac disease, Addison's disease and Graves' disease; in type 2 diabetes, such conditions include Cushing's syndrome, Conn's syndrome, acromegaly and hypothyroidism.

Pam Dyson (Research Dietitian, Oxford) continued the session with her talk on fad diets. She discussed the good diets (healthy eating, glycaemic index, calorie counting and commercial groups), the bad diets (low carbohydrate, meal replacement and very low calorie liquid diets), and the ugly diets (grapefruit diet or cabbage soup diet).

Pam emphasised how important it is to look at the evidence base for different

diets and began with healthy eating. This approach involves a reduced sugar and fat intake, increased fibre, and five servings of fruit and vegetables a day. Increased physical activity is also recommended and calorie intake is 500 kcal/day less than theoretical calculated energy requirements. Participants of the Look AHEAD (Action for Health in Diabetes; Look AHEAD Research Group, 2007) study followed this diet and achieved an average weight loss of 8.3 kg compared with 0.4 kg in the control group. (Although each participant in the intervention group had contact with lifestyle counsellors equivalent to 40–50 minutes each week, which is too time consuming for primary care!)

Evidence suggests that meal replacement diets result in significant weight loss over the short-term, but that dieters must continue using at least one meal replacement to maintain weight loss (Yip et al, 2001). The BBC diet trials (Truby et al, 2006) compared commercial diets, and all of them resulted in similar weight loss. Interestingly, individual weight loss seemed to depend on how much the person liked the diet and how motivated they were. Pam recommended offering people a range of diets to choose from, and opportunities to switch to a different one.

Ian Gallen (Consultant Physician and Endocrinologist, High Wycombe) closed the session with his talk on exercise in diabetes, explaining how exercise can delay the onset of type 2 diabetes in people with impaired glucose tolerance (Pan et al, 1997), and that it can improve glycaemic control for people with type 2 diabetes (Snowling and Hopkins, 2006).

Despite this benefit, the effects of exercise on blood glucose levels can be difficult to manage, with unpredictable hypoglycaemia discouraging many people from continuing with exercise.

While metformin, thiazolidinediones and acarbose have not been associated with low blood glucose levels as a result

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David Kerr, Consultant Physician and Diabetologist at the Bournemouth Diabetes and Endocrine Centre.



of exercise, people taking sulphonylureas should check their blood glucose level before exercise, and they may need to take extra carbohydrate during exercise to avoid hypoglycaemia.

People with type 1 diabetes should take on carbohydrate during exercise to maintain a steady blood glucose level. If exercise is taken regularly, the basal dose of insulin may need reducing. Regarding insulin pump therapy, this can offer people a more convenient way of adjusting their insulin dose as it administers a small amount of insulin gradually throughout the day, so the rate of delivery after exercise can be adjusted more often and more accurately.

Session 2. Organisation and training: Making things work better?

Simon Eaton (Consultant Diabetologist, Northumbria) opened this session with a practical talk on the lessons to be learnt from the Year of Care initiative.

The Year of Care is being tested in three pilot sites: Calderdale and Kirklees PCT, Tower Hamlets PCT and NHS North of Tyne. It is firstly about making routine consultations between clinicians and people with long-term conditions truly collaborative, through care planning, Dr Eaton commented. It is then about ensuring that the local services people need to support this are identified and available, through commissioning.

Dr Eaton went on to discuss how a care plan is not a piece of paper, it is a way of caring, involving people with diabetes in decision-making regarding how their diabetes will be managed.

A practical way of doing this is to send HbA_{1c} (and other relevant test results) to the person with diabetes before their appointment, and to then discuss the results with them on the day. This does, however, mean organising someone to coordinate and send out the results, and to obtain them from the hospital. Feeding back on this process, a person with diabetes reflected “It gave me time to read the results and think about what to raise ... you knew what was coming”, and a healthcare professional commented that “I enjoy doing the clinic a lot more now ... working with them rather than at them”.

A three-way debate: When starting insulin in people with type 2 diabetes, what should you recommend?

A show of hands from the audience at the beginning of the debate indicated that the majority would begin insulin therapy in people with type 2 diabetes with a basal insulin. Marc Evans (Consultant Diabetologist, Cardiff) agreed, commenting that he also felt that a basal insulin was the best way to initiate insulin therapy in people with type 2 diabetes. He supported this by showing that HbA_{1c} levels are on average between 9% and 9.5% (75 and 80 mmol/mol) before a person is advised to begin insulin treatment (McEwan et al, 2008). At this level, Monnier et al (2003) have shown that fasting glucose levels contribute most to overall hyperglycaemia, so it makes sense to address this with a basal insulin.

Stephen Gough (Consultant Physician, Birmingham) was next, reminding delegates that initiating the right insulin regimen is not simple, and that the individual needs of each person need to be considered. In a trial by Malone et al (2005), those in the twice-daily pre-mixed insulin group achieved a significantly lower HbA_{1c} level than those treated with once-daily basal insulin (7.54±0.87% [58.9±9.5 mmol/mol] vs. 8.14±1.03% [65.5±11.3 mmol/mol], $P<0.001$). Dr Gough argued that, in his experience, people using a basal insulin do not reach their target, and that after 6 months they need to add a meal-time dose to address postprandial glucose excursions, commenting “so why not begin with a pre-mixed insulin?”

Francesca Arundel (Lead Diabetes Specialist Nurse, Chichester) continued the debate by introducing the possibility of initially treating a person with type 2 diabetes with a prandial insulin. Francesca made the point that postprandial glucose levels contribute most to overall HbA_{1c} in those with an HbA_{1c} level below 8.4% (68 mmol/mol) (Monnier et al, 2003).

Francesca recommended asking people to fill in a food diary and record their blood glucose levels seven times a day to help to assess whether prandial insulin would be sufficient. For example, glucose levels after one large meal each day may be responsible for a high HbA_{1c}, so addressing this glucose excursion with a prandial insulin could improve overall glucose levels.

Session 3. The future of diabetes care: Worth the weight?

David Kerr (Consultant Physician and Diabetologist at the Bournemouth Diabetes and Endocrine Centre) began this session by talking about current and future technology in diabetes care.

Technology should be able to reduce the impact of diabetes on everyday life by offering peace of mind, reduced episodes of hypoglycaemia and avoidance of complications.

Insulin pumps are an existing technology that can improve quality of life and glycaemic control (Chantelau et al, 1997; DeVries et al, 2002). Appropriate training for insulin pump users should be conducted in the clinic setting by downloading data from the insulin pump and discussing how the person is using their pump, as well as introducing new features.

The patch pump is one of the latest innovations in this technology: insulin is delivered from a pump that is attached directly to the skin, and transmits wirelessly to a handheld device that is used to control the insulin dose. This minimises any problems with the tubing that delivers insulin from conventional insulin pumps and could be more comfortable to wear.

The technology for continuous glucose monitoring is also advancing. Very small implantable glucose sensors may soon

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be a reality, and continuous glucose monitors may be come part of specialist cars or aircraft.

The next talk was delivered by Ahmed Ahmed (Consultant Upper GI and Bariatric Surgeon, London), who began by looking at a case study of someone with type 2 diabetes who had decided to have a gastric bypass operation. Before surgery Mr T required 465 units of insulin per day. He was discharged after 4 days with a twice-daily dose of 20 units of a long-acting insulin, and 3–9 units of a short-acting insulin three times daily. One month after surgery Mr T did not require any insulin and had stopped his injections. The resolution of diabetes shortly after this type of surgery is not uncommon. It has not yet been proven how this phenomenon occurs, although a number of theories involve gut hormones.

Complications can occur after bariatric surgery, said Mr Ahmed. Gastric bands can occasionally slip out of place, or erode. The rate of complications after gastric bypass surgery is 2–5% (Longitudinal Assessment of Bariatric Surgery [LABS] Consortium et al, 2009) and ranges from gall stones and nutritional complications to more serious pulmonary embolism. However, the mortality rate for these procedures is as low as rates for the most common procedures, such as laparoscopic cholecystectomy. Operative 30-day mortality rates are 0.1% for restrictive procedures and 0.3% for Roux-en-Y gastric bypass (LABS Consortium et al, 2009).

Neil Munro (Associate Specialist in Diabetes, Chelsea and Westminster Hospital, and GP, Claygate) closed the conference with his talk on newer therapies for the management of hyperglycaemia in people with type 2 diabetes. Dr Munro explained how the number of agents has risen significantly in recent years and that updated guidance on how to prescribe these newer therapies has been published by NICE (2009).

One of these newer drug classes are the GLP-1 receptor agonists (exenatide and liraglutide, with more in development). These mimic the action of endogenous glucagon-like peptide-1 (GLP-1), a hormone that stimulates the production

of insulin in response to food intake, but one that is reduced in people with type 2 diabetes. Exenatide is normally injected twice-daily but novel forms of delivery are being investigated, including an implantable device that delivers the drug over the course of one year, inhaled or nasal spray, and a patch. Liraglutide is a human GLP-1 analogue that is injected once-daily.

Another newer class of drug are the dipeptidyl peptidase-4 (DPP-4) inhibitors. These, as the name suggests, inhibit the action of DPP-4, a protein that deactivates endogenous GLP-1. By blocking this enzyme in people with type 2 diabetes this increases endogenous GLP-1 levels to stimulate insulin production. Two DPP-4 inhibitors are currently available in the UK – sitagliptin and vildagliptin – with more in development.

The NICE (2009) guideline on newer agents for the management of hyperglycaemia in type 2 diabetes updates previous guidance to include a variety of recommendations for the use of the DPP-4 inhibitors and the GLP-1 receptor agonist exenatide. Liraglutide was not licensed for use at the time and is therefore not included in the document. ■

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From left to right: Marc Evans, Consultant Diabetologist, Cardiff; Stephen Gough, Consultant Physician, Birmingham; Francesca Arundel, Lead Diabetes Specialist Nurse, Chichester.