Ensuring a new decade of high quality diabetes care

A report from the 6th National Conference of the Primary Care Diabetes Society, which took place on 19–20 November 2010 at the Hilton Birmingham Metropole, Birmingham. The gold sponsor of the event was Novo Nordisk. This meeting report was generated independently by the publisher and conference speakers, with whom editorial control rests.

This conference, organised by the Primary Care Diabetes Society in association with *Diabetes & Primary Care*, aimed to improve the care of people with diabetes by promoting learning and interaction between healthcare professionals from across the primary care team. Talks covered topics such as optimising second- and third-line diabetes therapies, safe practice and assessing the risk–benefit profile of treatments, and community-based management of peripheral arterial disease. Masterclasses provided a forum for sharing experiences and best-practice advice. This document presents a summary of the conference.

Martin Hadley-Brown (GP, Thetford, Norfolk, and Chair of the Primary Care Diabetes Society [PCDS]) welcomed delegates to the 6th National Conference of the PCDS and hoped that the packed programme would help diabetes teams to deliver high-quality care in the next decade, despite the challenges and pressures now facing them.

HbA_{1c}: How low should we go?

Kamlesh Khunti (Professor of Primary Care Diabetes and Vascular Medicine, Leicester)

Professor Khunti began by looking at changes in glycaemic targets and the evidence supporting tight glycaemic control. The UKPDS (UK Prospective Diabetes Study; UKPDS Group, 1998) suggested that HbA_{1c} levels should be intensively lowered to 7% (53 mmol/mol), but at that point it was unknown whether reducing blood glucose levels further would produce additional micro- and macrovascular benefits.

The ACCORD (Action to Control Cardiovascular Risk in Diabetes; ACCORD Study Group et al, 2008) trial investigators set out to answer this question by intensively lowering HbA_{1c} levels to <6.5% (<48 mmol/mol) in 6 months. "They found that more people in the intensive arm of the study died than in the control arm, and the trial was prematurely stopped" said Professor Khunti.

ADVANCE (Action in Diabetes and Vascular Disease: Preterax and Diamicron MR Controlled Evaluation) also aimed to lower HbA_{1c} levels in the participants but the target of 6.5% (48 mmol/mol) was achieved more slowly, over a 3-year period (ADVANCE Collaborative Group et al, 2008). "ADVANCE shows us that there are improvements in microvascular outcome in the intensive arm, but fortunately," said Professor Khunti, "no difference in terms of mortality."

The UKPDS follow-up study showed that these micro- and macrovascular benefits were maintained after 10 years, which became known as the "legacy effect" (Holman et al, 2008).

A number of factors could be responsible for the increased mortality seen in the intensively treated group of the ACCORD trial, such as speed of HbA_{1c} reduction, hypoglycaemia, age and complications.

Hypoglycaemia is common in type 2 diabetes: "38% of people with type 2 diabetes report symptoms" said Professor Khunti (Alvarez Guisasola et al, 2008). He also explained that hypoglycaemic events make people less likely to adhere to therapy regimens. Hypoglycaemia is also associated with a higher rate of adverse outcomes – participants in the intensive treatment arm of the ADVANCE study had more adverse outcomes if they had experienced severe hypoglycaemia (Zoungas et al, 2010).

Professor Khunti emphasised the importance of screening and making an early diagnosis of diabetes. "With the NHS Health Checks programme and other screening initiatives, we are

picking up diabetes earlier now than in the past" he said.

"Where are the biggest hurdles, in terms of diabetes management?" asked Professor Khunti, and, after looking at data from primary care, he concluded that the biggest hurdle was a delay to intensify to third-line treatments (Brown et al, 2004).

Professor Khunti recommended aiming for tighter HbA_{1c} targets (≤6.5% [≤48 mmol/mol]) from diagnosis as recommended by NICE (2009), but avoiding such tight targets in people with long established diabetes, older people and those with cardiovascular (CV) disease.

Optimising second- and third-line treatments

Cliff Bailey (Professor of Clinical Science, Birmingham)

"We all agree that diabetes is a progressive condition, and that early, effective, durable glycaemic control is required to prevent or delay the onset of micro- and macrovascular complications" began Professor Bailey. NICE guidelines are holistic, measured and cost-conscious and are a sensible treatment pathway. However, Professor Bailey reminded delegates that "these guidelines are for you to use at your discretion for the individual in front of you". Professor Bailey then focused on the metformin treatment pathway.

Metformin improves insulin sensitivity but it does not cause hypoglycaemia or weight gain and has vascular protective effects. When optimising diabetes therapies there are issues around efficacy, tolerability, choice and safety, to name but a few. "The important thing is to individualise treatment by considering which issues are most significant to the person with diabetes," said Professor Bailey, "optimisation isn't just about HbA_{1c}".

Looking at combination therapy, Professor Bailey explained the "principle of combinations". "When you combine diabetes therapies, two antidiabetes agents will have additive blood glucose-lowering effects, as long as they have different modes of action" he said. This rule does not include insulin, and is dependent on some remaining beta-cell function. Professor Bailey then explained that maximising the dose of one agent may not be the best way to optimise therapy. "Two agents can give a better blood glucose-lowering effect and fewer side-effects at smaller doses than one agent at maximum dose" he said, citing a study by Garber et al (2003), which compared metformin and glibenclamide monotherapy with both agents in combination.

Moving on to insulin, "probably the best approach is to add insulin to metformin" said Professor Bailey, looking at data from Douek et al (2005), which showed less weight gain, lower amounts of insulin required and no more hypoglycaemia with insulin combined with metformin compared with insulin therapy alone.

Professor Bailey concluded by recommending the use of combination tablets, such as metformin plus pioglitazone and metformin plus sitagliptin in certain individuals. He emphasised again the importance of individualisation.

Who should receive insulin?

Gwen Hall (Vice Chair of the PCDS, Associate Editor of Diabetes & Primary Care *and Diabetes Specialist Nurse in Primary Care, Haslemere)*

"With all these new agents, there aren't actually that many people who do need insulin" said Gwen. However, she explored the treatment options for a few people who may require the drug.

For example, Tom, a 50-year-old man, was diagnosed with type 2 diabetes by an oral glucose tolerance test 4 years ago. He feels awful and is lacking energy. He is taking the maximum dose of metformin and a sulphonylurea and his HbA_{1c} level is 9.3% (78 mmol/mol).

Gwen asked the delegates, "what would you do?" and then explained that Tom has latent autoimmune diabetes of adults (LADA) and requires insulin therapy. LADA is a form of type 1 diabetes that generally occurs in people over the age of 30 years and has a genetic link. Positive circulating glutamic acid decarboxylase (GAD) antibodies confirm the diagnosis and reflect the autoimmune nature of the beta-cell destruction. Tom's diabetes is now well managed on small doses of insulin and he feels a lot better.

Other people who should be considered for insulin therapy are women with diabetes during pregnancy, people with type 2 diabetes after an acute myocardial infarction or if they have acute illness or infection. "It's important to remember that some people may be able to come off insulin again later, depending on why it was initiated" said Gwen.

NICE (2009) recommends initiating insulin with a structured education programme and beginning with neutral protamine Hagedorn (NPH) insulin. "But how many people here do not start with NPH insulin?" asked Gwen, and most delegates said they initiate insulin regimens using an insulin analogue. NICE also recommends a premixed insulin, particularly if the person's HbA_{1c} level is ≥9% (≥75 mmol/mol).

Gwen then presented some evidence for different insulin regimens. Lasserson et al (2009) found that initiating a prandial or biphasic insulin regimen may offer better glycaemic control than a basal-only regimen but with a potential increased risk of hypoglycaemia. Studies that are longer in duration are needed to confirm this result.

Another study, by Holman et al (2009), concluded that a basal- or prandial-based insulin regimen taken in addition to oral antidiabetes drugs

Interactive masterclasses

On the first day of the conference a series of eight interactive masterclasses were available. Delegates chose to attend the two sessions that were of most interest to them.

Using diabetes management IT systems to improve patient care

Julian Brown, GP, Norfolk; Alistair Emslie-Smith, GP, NHS Tayside; Richard Quigley, GP, Glasgow

The Scottish Care Information – Diabetes Collaborative (SCI-DC) system is used by healthcare professionals across primary, secondary and tertiary care and holds electronic records for over 235 000 patients. The next stage of developing the system is to give people with diabetes access to their own records and advice in understandable language. The system Diabetes Manager, developed by Dr Brown, has already made this information available to patients.

Patient education in primary care

Debbie Hicks, Nurse Consultant – Diabetes, Enfield

Education is key to encouraging self-management of diabetes, and should be part of every diabetes service. NICE (2009) has specific criteria for structured education, including that it should be delivered as part of an individual's ongoing care.

Education in groups has the advantages of providing a feeling of peer support, and being able to learn from each other, although some people may feel shy or embarrassed and one-to-one education may suit them better.

Erectile dysfunction

Dave McAughey, Associate Fellow, Institute of Clinical Education, Warwick Medical School, Coventry

Erectile dysfunction is common among men with diabetes and treatments range from pharmacological to physical; Dave showed delegates a couple of vacuum devices and explained that they can be suitable for men who no longer respond to oral medication, and discussed surgical treatments.

He also explained how using humour in a consultation can help people to be more open about their sexual health, and recommended that patients bring their partner to every consultation.

Insulin intensification

Francesca Arundel, Lead Diabetes Specialist Nurse, Chichester; Brian Karet, GPSI, Bradford

Insulin is now widely initiated in people with type 2 diabetes by GPs and practice nurses in primary care. This masterclass looked at how to intensify an insulin regimen when it is not sufficiently controlling blood glucose levels.

Some examples of individuals who need intensification of their insulin regimen were discussed and used to illustrate certain circumstances, such as large carbohydrate-heavy meals, missing meals and fasting during Ramadan.

Obesity treatments: What works, when and for whom?

Matthew Capehorn, Clinical Director, National Obesity Forum, Yorkshire and The Humber

Dr Capehorn called delegates to focus their attention on treating the cause of obesity rather than the consequences. Obesity is a social problem, with multiple causal factors, and is one of the few preventable risk factors associated with an increased risk of comorbidities, including diabetes.

Dr Capehorn explained how the Rotherham Institute for Obesity was developed, and now provides a mulitdisciplinary integrated service for weight management.

Diet in the older person with diabetes

Alison Exelby, Diabetes Specialist Dietitian, Redhill

With an ever increasing population with type 2 diabetes and people with type 1 diabetes living longer, healthcare professionals need to support them to self-manage their diabetes to optimise their quality-of-life. Diet is the cornerstone of all diabetes treatment and older people have specific nutritional needs to consider.

This interactive session reviewed some basic nutrition facts, discussed how healthcare professionals can help people with diabetes with specific queries, and explored educational resources.

Angry adolescents

Jen Nash, Clinical Psychologist, London

Unfortunately, Jen could not attend the conference, but Martin Hadley-Brown (GP, Thetford), Marc Evans (Consultant Diabetologist, Cardiff) and Claire Holt (Practice Nurse and Diabetes Lead, Coventry) delivered the session. Dr Evans discussed the challenges of motivating adolescents to self-care and some other issues, including recreational drug use and alcohol abuse.

A role play with Dr Hadley-Brown playing the GP and Claire playing the adolescent highlighted, in an amusing way, the difficulties of communicating and engaging with adolescents.

Diabetes diagnosis criteria

Stephen Lawrence, GPSI, Medway

The criteria for diagnosing diabetes has been the source of some debate. It is argued that fasting blood glucose levels are inconvenient and there are large diurnal and biological variations. HbA_{1c} has been considered and rejected up until 2009 when the International Expert Committee (IEC) concluded that the advantages – the values reflecting overall glycaemic exposure, and fasting not being required – and improvements in technology eliminate the major impediments to using HbA_{1c}. The IEC recommend ≥6.5% (≥48 mmol/mol) as the diagnostic threshold.

achieved better HbA_{1c} reductions than a biphasic insulin regimen, with less hypoglycaemia and less weight gain in those on the basal regimen.

"But," said Gwen, "make sure you consider the needs of the individual, and work with them so they can make an informed choice".

Keynote lecture: Future treatments

Neil Munro (GP, Claygate and Associate Specialist in Diabetes, London)

Dr Munro provided a background to diabetes treatments by looking at the physiology of a beta cell, including the glucose-dependent mechanism by which insulin is released. "How do we replace the beta cells that are destroyed in people with diabetes?" asked Dr Munro. "Transplantation is the most obvious solution" he said, and explained that islet transplants were initially successful, but after 5 years only 10% of the recipients remained insulin independent (Ryan et al, 2005). The possibility of using pluripotent embryonic stem cells was investigated, but there were ethical issues regarding collection of the stem cells from 5-day old embryos. Adult stem cells are not pluripotent but they can differentiate into some specialist cells. "Research into adult stem cells is being pursued" said Dr Munro.

Vaccines for diabetes are being actively researched in the USA. Phase I trials of the DNA plasmid vaccine BH2-3021 show that it is well tolerated and appears to preserve pancreatic function. Participants of the trial were C-peptide positive and had well controlled diabetes.

"New 'warp-speed' insulins are on the horizon," said Dr Munro, "which have a faster mode of action, and will primarily be used in insulin pumps". Other means of delivery are also being researched: "Investigators in Japan tried to develop insulin in eye drops, but you had to put one in every minute, which was quite impractical!" said Dr Munro. Oral insulin is now in phase III trials, but researchers need to overcome the hurdles of premature degradation and diffusion.

The idea of a gut contents transplant is a novel one, involving a lean person's gut contents being transplanted into a person with type 2 diabetes. "When this was done in diabetic rats, the recipient lost weight and returned to normoglycaemia" said Dr Munro.

Long-acting incretin therapies, such as albiglutide and exenatide once-weekly, are in various stages of development and linagliptin, a new dipeptidyl peptidase-4 inhibitor, is in phase III trials.

Other novel drugs in development include sodium-glucose co-transporter 2 (SGLT-2) inhibitors, which inhibit the reabsorption of glucose in the kidneys, glucokinase activators and glucagon receptor antagonists.

Dr Munro also mentioned the development of the Raman spectrometer, a non-invasive meter that uses light to measure blood glucose levels. Research is ongoing at the Massachusetts Institute of Technology.

Understanding safe practice

Martin Hadley-Brown (Chair of the PCDS and GP, Thetford) and Marc Evans (Consultant Diabetologist, Cardiff)

"Our first principle as medical professionals is first, do no harm" said Dr Hadley-Brown and urged delegates to write down questions to be answered in the second half of the talk.

Dr Evans then looked at the challenges in providing diabetes care. "Glycaemic targets are the most difficult ones for people with diabetes to meet," said Dr Evans, "but intensively pursuing these targets can cause harm in terms of cardiovascular events". Participants of the ACCORD study (ACCORD Study Group et al, 2008) experienced significantly more CV events in the intensive arm than those in the standard therapy arm. "The link between intensive glucose lowering and all-cause mortality, may be an increased rate of hypoglycaemia".

"Maximising benefit means minimising risk" he continued. The meta-analysis by Currie et al (2010) shows that the lowest risk of all-cause mortality and CV events is associated with an HbA_{1c} level of around 7.5% (58 mmol/mol). However, if a person's HbA_{1c} level is 11% (97 mmol/mol) and it is reduced to 7.5% (58 mmol/mol), the risk may outweigh the benefit. "It is all about individualising therapy" he said.

"Guidelines and targets need to reflect the risk–benefit balance that we see in clinical practice on a day-to-day basis", said Dr Evans, introducing the step that NICE are taking towards quality-based standards, and value-based pricing, that takes the benefit profile of treatments into account.

Dr Evans also gave some advice on how to protect against kidney damage, to remember to stop statins and angiotensin-converting enzyme inhibitors during pregnancy, and advised delegates to keep up-to-date with risks and contraindications of diabetes therapies.

Metformin was discussed in detail in the question-and-answer session following Dr Evans' talk. One delegate asked for clarification of the physiology of lactic acidosis occurring as a result of metformin therapy during acute illness. Dr Evans replied: "when renal function deteriorates, such as during acute illness, metformin accumulates and undergoes liver metabolism, resulting in lactic acidosis". Another delegate asked "how can metformin be stopped when blood glucose levels normally go up during illness?" Dr Evans explained that another glucose-lowering therapy may be used, such as insulin, just for the time that person is in hospital. Before being discharged, the individual can go back on to metformin. "However," he warned, "sometimes hospital staff do forget to put people back on metformin

before they are discharged, and the individual then refuses to take it, even though they are well".

Community-based assessment and management of peripheral arterial disease – introducing the Manchester leg circulation service

Louise Stuart MBE (Consultant Podiatrist, Chair of Foot in Diabetes UK, Manchester)

"Why is peripheral arterial disease (PAD) important?" asked Louise. The mortality rates for people with PAD are high – 30% of them will die within 5 years (TransAtlantic Inter-Society Consensus, 2000). "That's higher than the mortality rate for breast cancer" she said.

PAD causes intermittent claudication in the calf, buttock, thigh or foot, which is only relieved by rest. "These patients sometimes present with painful cramps in their feet, which are often misdiagnosed as common cramps" said Louise.

She then went on to describe the development of the North Manchester leg circulation service. "Before the redevelopment of the service, a lot of people who were referred to the vascular surgeon did not need intervention, and were sent back to the GP," explained Louise, "but now there is a clear pathway, and many people with PAD are seen in the community. We found that the new service reduced inappropriate referrals by 80%". The service is advertised in the community to improve awareness of the condition. "We went into the local market and screened people for leg pain. The following week, our secretary received 180 phone enquiries from the general public!" said Louise.

Between October 2009 and October 2010, 294 people were seen in the leg circulation clinic and 157 were diagnosed with PAD, 87 were diagnosed with intermittent claudication and 27 were referred on to the vascular surgeon. Louise quoted a GPs praise of the service: "From a commissioner's perspective it provides an easily accessible and cost-effective alternative to a traditional outpatient appointment and highlights the skills available within the clinical community".

"Critical limb ischaemia is the silent plague of the community" said Louise. People with critical limb ischaemia have unremitting burning rest pain that is worse in bed. She explained the case of an older woman with a blue toe – a common occurrence in older people – whom she urgently referred to the vascular surgeon. The surgeon saw the woman a week later and she required a below-knee amputation. Louise warned delegates about the speed and severity to which critical limb ischaemia can escalate.

Diabetes: Have I got news for you

Eugene Hughes (GP, Isle of Wight)

Gwen Hall, Neil Munro, Martin Hadley-Brown and Marc Evans formed a panel, chaired by Dr Hughes to look at diabetes in the news. Dr Hughes lightheartedly led the panel through various diabetes news stories, such as cinnamon improving diabetes control (Akilen et al, 2010), chocolate improving HDL-cholesterol (Mellor et al, 2010) and the association between rimonabant and suicide (Topol et al, 2010). The talk concluded the conference in a humorous way and delegates left armed with the tools, knowledge and enthusiasm to continue delivering high-quality diabetes care into the next decade. ■

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