

# Diabetes: past triumphs, current challenges, future horizons

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The 2013 RCPE Symposium on diabetes brought together a distinguished panel of speakers from the UK along with the Canadian historian Professor Michal Bliss. The speakers were challenged with the questions: How do we best deliver diabetes care? Can we take advantage of technological developments to improve care? How do we empower individuals to look after themselves? Do we individualise care or treat to the guideline? Why should people with diabetes exercise and should this be encouraged on an individual or societal level? Do we need to use genetics to individualise care or are there other approaches to phenotyping? What followed was an engaging and informative overview of current issues in diabetes care.

## MY DIABETES AND IDIABETES

Communication was the main theme of the first session. Dr Graham Kramer (GP Montrose and National Clinical Lead for Self-Management and Health Literacy, Scottish Government) discussed how health literacy was fundamental to our clinical consultation process. Poor health literacy in diabetes is associated with doubling of the complication rates,<sup>1</sup> and it is very clear that the dynamics of the clinical consultation need to be addressed so that the patient is activated and encouraged to take the lead role using such techniques as 'teach back' (teach back is a way to confirm that you have explained to the patient what they need to know in a manner that the patient understands; this is proven when they explain it back to you). Dr Nick Lewis-Barned (RCP London Clinical Fellow for Shared Decision-Making and Consultant Diabetes Physician, Northumbria) reminded the audience that patients need to believe their treatments are relevant, and achieving this requires careful planning and a more collaborative partnership, especially as we will spend on average less than 0.05% of time over the year with each individual patient. Perhaps technology can help address this problem through projects such as 'MyDiabetesMYway' which allows asynchronous sharing of clinical data between healthcare

professional and patient. Scott Cunningham (Technical Consultant, SCI Diabetes Collaboration, Dundee) presented screenshots showing how clinical data can be viewed in a multitude of easily digestible, different formats to allow patients to be aware of their own data, while Dr Deborah Wake (Senior Clinical Lecturer and Consultant Physician, Dundee) then took the audience on a worldwide tour through the varying web-based applications used to empower and interact with patients. She highlighted that technology could also be used by patients for goal setting, personalised coaching or even as a communication interface to the health care professional.

## RUN FOR IT!

Our society is now characterised by increasingly high levels of sedentary behaviour. Dr Jason Gill (Reader, Institute of Cardiovascular and Medical Sciences, Glasgow) reminded us that 150 minutes of moderate exercise per week and a moderate weight loss of 5–7% can reduce incidence of diabetes by two-thirds, while higher fitness levels improve survival rates and reduce microvascular complications. However, prescribing exercise may be ineffective. Dr Rob Andrews (Consultant Senior Lecturer, School of Clinical Sciences, University of Bristol) reported that most studies show benefit only if advice is given on both exercise and diet and even then, most will not maintain this lifestyle change. He concluded that incorporating exercise through bicycling/walking to work or breaking up sedentary time may be a more realistic approach. Dr Ian Gallen (Consultant Diabetologist, Wycombe Hospital, Buckinghamshire) then discussed some of the challenges in optimising glycaemia during exercise in type 1 diabetes mellitus (T1DM).<sup>2</sup> He reviewed important areas such as the appropriate nutritional replacement during exercise and the effect of different exercise intensities on glucose during, immediately after and during the night following exercise, illustrating the importance of taking a comprehensive exercise history in order to deliver the best advice.

## TYPING DIABETES

Dr Katherine Owen (Senior Clinical Lecturer and Consultant Physician, Oxford Centre for Diabetes, Endocrinology and Metabolism) reminded the audience that 1 in 20 patients with diabetes diagnosed under the age of 45 have maturity onset diabetes of the young (MODY). This should be considered in T1D patients who are antibody negative, have evidence of continued insulin production and a positive family history, while individuals with T2D of young onset, a positive family history, who are lean and who experience hypoglycaemia on low dose sulphonylureas should also be tested. In addition, low high-sensitivity C-reactive protein (hsCRP) ( $\leq 0.25$  mg/L) is very sensitive for the hepatocyte nuclear factor (HNF) 1 $\alpha$  mutation. Professor Andrew Hattersley (Professor of Molecular Medicine and Consultant Physician, Peninsula Medical School) then urged diabetologists to start measuring their hormone to aid in diagnosis and management.<sup>3</sup> As an example, the urinary c-peptide protein creatinine ratio (UCPCR) or non-fasting serum c-peptide have been shown to correlate well with stimulated tests of c-peptide, and can be used to aid in diagnosis or in deciding on whether an individual might benefit from glucagon-like peptide-1 (GLP-1) receptor agonist therapy.

## INSULIN PAST, PRESENT AND FUTURE

Severe hypoglycaemia remains a major problem for those with T1D. Professor James Shaw (Professor of Regenerative Medicine for Diabetes, Newcastle University) presented data from the recent HYPOCOMPASS trial, a randomised controlled trial that compared different insulin replacement regimens (multiple injection vs pump) and monitoring (real-time continuous glucose monitoring [CGM] or finger-prick testing) all following a period of structured education. They found that structured education combined with any of the therapeutic approaches was effective in reducing severe hypoglycaemia frequency as well as improving hypoglycaemia awareness across all four study groups.<sup>4</sup> At the same time, severe hypoglycaemia is not prevented in all individuals and islet transplantation remains an option for those most severely affected.

## REFERENCES

- Schillinger D, Grumbach K, Piette J et al. Association of health literacy with diabetes outcomes. *JAMA* 2002; 288:475–82. <http://dx.doi.org/10.1001/jama.288.4.475>
- Lumb AN, Gallen IV. Diabetes management for intense exercise. *Curr Opin Endocrinol Diabetes* 2009; 16:150–5. <http://dx.doi.org/10.1097/MED.0b013e328328f449>

The last few years has seen renewed interest in the contribution of glucagon to abnormal glucose homeostasis. Professor Stephen Gough (Professor of Diabetes and Consultant Physician, Oxford Centre for Diabetes, Endocrinology and Metabolism) discussed the potential advantages of suppressing glucagon secretion as an adjunct therapy in T1D. For instance, pramlintide, a drug already licensed in the US, has shown beneficial effects on post-prandial rises through reducing post-prandial glucagon, GLP-1 receptor agonists by suppressing fasting and post-prandial glucagon levels, may reduce glucose variability.

## AND FINALLY

To conclude the day, Professor Michal Bliss (University Professor Emeritus, University of Toronto, Canada) gave an elegant presentation of his research on JJR Macleod, Scotland's insulin laureate. Although the discovery of insulin has been ascribed to Banting and Best, Professor Bliss highlighted JJR Macleod's crucial role as both mentor and supervisor in this discovery. He took the audience on a journey back into the early 1920s. The discovery of insulin was one of the twentieth century's greatest discoveries. He pointed out the pivotal and collaborative role of each of its discoverers, with Banting providing the initial idea with the help of Best, the purification process developed by Collip and the direction and supervision offered by Macleod. The story had many twists, and his lecture gave the audience a fascinating insight into the strong personalities of each of the main characters.

## TAKE-HOME MESSAGE

This symposium offered the audience an insight into the deficiencies of the age old 'consultation' tool and the challenge of using technological advances to improve this vehicle of communication. Personalising diabetes care in a heterogeneous population of patients was discussed, and strategies to empower patients in their own journey were also highlighted.

- Jones AG, Hattersley AT. The clinical utility of C-peptide measurement in the care of patients with diabetes. *Diabet Med* 2013; 30:1342–8. <http://dx.doi.org/10.1111/dme.12159>
- Leelarathna L, Little SA, Walkinshaw E et al., Restoration of self-awareness of hypoglycemia in adults with long-standing type 1 diabetes: hyperinsulinemic-hypoglycemic clamp substudy results from the HypoCOMPASS trial. *Diabetes Care* 2013; 36:4063–70.