

Diabetes Across the Lifespan symposium

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BACKGROUND

Recent estimates suggest that there are 3.9 million people living with diabetes in the UK, representing 1 in 16 of the population (<http://www.diabetes.org.uk>). Globally, the estimated prevalence of diabetes is estimated to reach 592 million people by 2035. Diabetes affects people of all ages and at this symposium we aimed to discuss diabetes 'across the lifespan'. The symposium covered the management of diabetes from early years, through childhood, young adulthood including pregnancy, to later life and senescence. This symposium attracted specialty consultants, general practitioners, trainees and other members of the multidisciplinary team from around the UK and via live stream to 18 countries on three continents.

SESSION 1 – THE EARLY YEARS

Professor Helen Murphy (University of East Anglia) opened the session with a discussion of the optimal management of Type 1 diabetes during pregnancy. Because glycaemic control at the start of pregnancy is the major determinant of control throughout, and of pregnancy outcomes, opportunities to discuss contraception and pregnancy planning should not be missed. The National Pregnancy in Diabetes Audit¹ has revealed outcomes in type 1 diabetes have not improved in recent years. Strategies to improve metabolic control include closed-loop or artificial pancreas systems, which have shown promise in pilot clinical studies.² Studies of insulin pharmacokinetics in pregnancy suggest earlier administration of bolus insulin may be required to minimise post-prandial glycaemic excursions.

Dr Fiona Campbell (St James's University Hospital, Leeds) presented data on outcomes for children and adolescents with type 1 diabetes, which show that the

UK lags behind the rest of Europe. Policies which aim to address this disparity are well established, but a 2014 Care Quality Commission report revealed there is wide geographical variation in their implementation.³ Earlier adoption of new technologies, including more widespread use of insulin pump therapy and regular review of pump downloads, is required to improve care for children and adolescents with type 1 diabetes.

In young people with type 2 diabetes, cardiovascular risk is particularly high and undermanaged. Professor Melanie Davies (University of Leicester) presented data showing the alarmingly high prevalence of hypertension, dyslipidaemia and non-alcoholic fatty liver disease at diagnosis of type 2 diabetes in young people. Reflecting this, there is evidence to suggest accelerated development of micro- and macro-vascular complications compared to young people of similar age with type 1 diabetes. Aggressive targeting of risk-factor reduction, with a more proactive multidisciplinary approach, is required to improve outcomes.

SESSION 2 – DIABETES ACROSS THE LIFESPAN

Ms Dani Cochrane (Diabetes Scotland) provided a valuable personal insight into living with type 1 diabetes as a young adult. She highlighted the need to provide a positive environment for encouragement in change in diabetes care settings, illustrating that positive affirmation, empathy and empowerment are more powerful motivators for change than the feeling of judgement. On a personal level she had found the question 'What is important to you?' the most useful discussion point she had ever had in clinic, opening avenues to improved joint care and management. Dani also highlighted that attending a Diabetes Camp with other young people with type 1 diabetes had been a major help in coming to terms with her condition. She stressed that structured

education sessions such as DAFNE (dose adjustment for normal eating) and starting on an insulin pump had been major steps in improving her diabetes control and helping her 'live' with diabetes, but only because she was receptive to this information at the time.

Professor Rury Holman (University of Oxford) presented this year's WA Alexander Lecture, discussing the ongoing relevance of UKPDS⁴ to Diabetes management in 2015. We were reminded of the key findings in UKPDS and UKPDS2 which provide influence on clinical practice (knowledge that 50% of T2DM patients have complications at diagnosis, influencing screening and the drive to intervene earlier; relative influences of hyperglycaemia and hypertension on micro- and macrovascular outcomes and risk reduction obtained with improved control including the legacy effect of good glycaemic control; the notion of T2DM progressing with time associated with pancreatic beta-cell loss; the role of metformin in cardiovascular risk prevention). The utility of a cardiovascular risk engine outcome model based on UKPDS data, evaluating cardiovascular risk and influence of intervention on a patient and population scale respectively, to inform improved current practice and management of type 2 diabetes, was highlighted.

SESSION 3 – LIVING WITH DIABETES AND COMPLICATIONS

Professor Solomon Tesfaye (Royal Hallamshire Hospital, Sheffield) gave an overview of the challenges in early diagnosis and management of diabetic neuropathy. Diabetic neuropathy is the strongest risk factor for amputation, a devastating complication which results in only 50% surviving two years. The number of amputations due to diabetes has increased in recent years, suggesting improved strategies are required to prevent diabetic neuropathy and delay its progression. Given the lack of disease modifying drugs, early identification is important to enable risk factor modification. Recent studies have increased our understanding of abnormalities which occur in the brain, spinal cord and peripheral nerves in diabetic neuropathy. Novel screening strategies to detect these abnormalities are emerging to enable identification at an earlier stage.

In contrast to the increasing number of amputations, morbidity due to diabetic retinopathy is falling. Professor Paul Dodson (Birmingham Heartlands Hospital) presented data from the UK retinal screening programme, which has the highest uptake of all UK screening programmes. Retinal screening has meant that diabetes is no longer the most common cause of blindness in the working age population. Recent developments in diagnosis (optical coherence tomography) and therapeutics (anti-VEGF⁵) may offer the opportunity to further build on this success. However, in order to

further increase uptake of retinal screening, greater integration between primary care, secondary care and the retinal screening service is required.

SESSION 4 – LATER YEARS AND LOOKING FORWARD

Dr Alastair Leckie (NHS Fife) provided a thought-provoking insight into occupational constraints for people with diabetes. We were encouraged to consider not just a job title, but to ask each person what that job entailed on a day to day basis. Knowledge of the day-to-day activities associated with the job is essential to understand whether diabetes may affect the ability to do a particular job and/or whether the nature of the job may influence the way someone can manage their diabetes. He encouraged us to consider situations individually, reminding us that to maintain the health and safety of the patient and that of others, restrictions may still be required in certain employment situations.

Dr Ahmed Abdelhafiz (Rotherham Hospital) discussed the management of diabetes in the older population. The need to consider multiple pathology and mixed pathology within an organ system in this patient group was highlighted, with the need to treat each patient individually in a cohort where evidence base is lacking and treatment guidelines for concurrent pathologies may contradict. The role of cardiovascular risk management was focused on, noting that in this patient group tight glycaemic control can be shown to worsen outcome (for example due to risk of hypoglycaemia), and there may be a need for individualised treatment targets.

Professor Stephen Gough (University of Oxford) closed the session with an exploration into new therapies in the management of type 2 diabetes. Considering the immediate future, discussion centred on new insulins and the cardiovascular risk profile of novel agents for type 2 diabetes, providing data from a recent trial using empaglifozin (an SGLT2 inhibitor) as an exemplar for further study but with encouraging initial results showing dramatic reductions in cardiovascular mortality and morbidity.⁶ Looking into the future, the expanding role of gut hormone modulation was discussed, focusing on combination therapies (such as GLP-1 with basal insulin), development of novel modes of delivery (including trials of oral incretin therapy) and the need to further understand the role of gut hormones and the microbiome in metabolism to identify other targets for medical therapy, and elucidate the cause of metabolic consequences of bariatric surgery. Awaited results of randomised controlled trials comparing multiple and combination treatments including novel therapies were highlighted as key to provide evidence base for future clinical practice. Ultimately, the aim of type 2 diabetes care with improved knowledge would be to improve

outcome by personalisation of treatment, allowing us to tailor therapy to the individual.

CONCLUSION

The symposium brought together a number of influential speakers to give an excellent overview on the management of diabetes across the lifespan, and a valuable insight into living with diabetes. The symposium demonstrated the impact of research in improving outcomes for those with diabetes at all stages in life, and gave a fascinating insight into future directions in diabetes care.

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