Introduction

The November-December 2002 issue of this journal (BJDVD) commemorated 50 years of progress during the reign of Elizabeth II (http://www.bjvd.com/content/2/6.toc). The distinguished contributors to that Jubilee issue reflected on the achievements in research and clinical practice over the second Elizabethan era. Some of the authors have contributed again to this Diamond Jubilee issue, and are joined by some other equally renowned experts in the field of diabetes, to look at the progress and to reflect on continuing problems with diabetes care, over the past 60 years. This is not an all-embracing review but more a reflection of individuals who gave, and are still giving, a life-time of their talents to forwarding the care of people with diabetes mellitus.

Changing times

In Scotland, where I practice, in 2012, 1 in 20 of the Scots population have diabetes; 5% of the population, up from 4.3% just over one year ago. The condition is increasing by about 10,000 cases a year. A total of 250,000 people are now affected, the majority of some 220,000 have type 2 diabetes. Of this latter group 88% are either overweight or obese. These statistics are reflected in most developed countries, and in some the prevalence is much higher.

In this issue, Professor Tattersall reflects on the hard won victories to improve outcomes for DKA and diabetic pregnancy. In 1952, 30 years after the introduction of insulin, DKA had a 30% mortality and there was only a 50-50 chance of a live baby from a diabetic pregnancy. The outcomes for both DKA and pregnancy are now very much better. For DKA, the mortality is <2%, death is mainly associated with severe co-morbidities. But, in many parts of the developing world, the mortality is still 30% or more, mainly due to late presentation with circulatory collapse and multi-organ failure. There is still no room for complacency in the developed world where death from DKA is preventable. Errors leading to death occur at three levels:

1. Firstly, with patient failure to recognise the warning features of impending DKA;
2. Secondly, with the family doctor or attending emergency physician who gives wrong advice – the old chestnut of ‘stop your insulin now in case you go hypo’ given to an acidotic patient with vomiting;
3. Thirdly, mistakes at hospital level with failure to prevent hypokalaemia (and cardiac arrest) during intravenous fluid and insulin therapy. This probably represents the commonest cause of litigation in diabetes care.

The historical review of diabetic pregnancy deals principally with type 1 diabetes. The advent of pre-pregnancy care has ensured much better outcomes in this group. However, the problem now is the increasing number of ‘unexplained’ stillbirths associated with maternal obesity and gestational diabetes, a challenge to be met.
Professor Marks highlights the pivotal role that clinical biochemistry has played in the understanding and treatment of diabetes. Over the past 60 years, the ability to measure glucose, insulin, glucagon, GLP-1, GIP and C-peptide has increased the understanding and ability to treat diabetes. Professor Lefebvre gives a personal journey of research over 50 years into one of these hormones, namely glucagon, which started life as a possible anti-inflammatory agent and ended up being recognised as a hormone secreted where there is intra-islet insulin deficiency. It is now recognised in playing an important role in the action of incretin-based therapies, DPP-4 inhibitors and GLP-1 analogues, which are now well established in present day guidelines, such as the recent ADA-EASD guidance.

Progress in type 1 diabetes has been disappointing in some ways in that some 40 years or so after the simultaneous discovery of islet cell antibodies in Edinburgh and London, there is still no cure for this auto-immune disease despite much expense and research effort. Humans insulins have now superseded animal insulins and debate continues as to whether genetically-engineered insulin analogues have clinical advantage to justify their 2-4 times greater cost over human insulins. Technological advances in blood glucose meters and continuous CSII with pumps have facilitated the improved management of type 1 diabetes. In the UK, the wider prescribing of pumps is still subject to postcode prescribing variations.

From being a well-recognised international figure at the ‘sharp end’ of diabetes, Professor Keen, in his retirement, is now working in a primary care setting with special responsibility for foot screening. He is impressed how well primary care is coping with the immense challenge of undertaking diabetes care. Now hospital diabetes centres and GP diabetes clinics are running in tandem, each with its own responsibilities and strengths, and both requiring the expertise of diabetes specialist nurses.

Mary MacKinnon, with a long and distinguished career as a diabetes nurse specialist and educator, reviews the key role that nurses play in imparting knowledge to diabetic patients and their carers so that they become their ‘own expert’. Diabetes specialist nurses are now well established in the management of paediatric and adolescent care, in diabetic pregnancy, in supervision of patients with meters and pumps, and playing an increasing role in patient safety in in-patient supervision of insulin therapy.

Professor Lebovitz describes the continuing progresses and challenges with regard to type 2 diabetes, updating his 2002 review with regard to newer agents, such as DPP-4 inhibitors and GLP-1 analogues. Metformin remains the cornerstone of drug therapy with recognised cardiovascular protective actions and possible benefits in prevention or amelioration of certain malignancies, the latter action undergoing intensive clinical trials in non-diabetic subjects. Bariatric or metabolic surgery is increasing in use but again is subject to postcode variation in practice. It does offer the advantage of ‘curing’ type 2 diabetes in obese patients and obviates the need for large doses of insulin in very obese patients with severe insulin resistance.

The July-August 2011 issue of Br J Diabetes Vasc Dis was devoted to the primary prevention of type 2 diabetes and in particular the importance of lifestyle changes with diet and exercise programmes (http://www.bjdv.com/content/11/4). A global network dealing with the prevention of diabetes has been established by Peter Schwartz in Dresden with many different initiatives now underway in various countries worldwide.

In the UK, NICE and SIGN guidelines have set out quality standards for screening for diabetes complications, and the management of diabetes and its co-morbidities. The tools are now available to improve diabetes care. Indeed screening programmes are readily available for retinal, renal and neuropathic complications with non-mydriatic retinal photography, microalbumin testing and foot screening. Aggressive cholesterol reduction and blood pressure lowering by statins and RAS blockade have seen a marked fall in cardiovascular complications, with type 2 diabetes no longer a vascular risk equivalent of a non-diabetic subject with a previous myocardial infarction. Professor Cameron reviews the progress in diabetic renal disease management but ends his article by quoting from the British Medical Journal review article commenting on the crisis in diabetes care in England. Many failings have been identified from the National Diabetes Audit in 2009-10, with only 50% of diabetic patients receiving all the recommended care processes, fewer than 1 in 5 achieving treatment targets, and an estimated 24,000 avoidable deaths occurring each year. There appears to be a wide variation in both specialist care and in outcomes for the complications of diabetes.

Conclusion

In this BMJ review, it stresses a need for integrated care to allow patients to move seamlessly between primary, community, and secondary care depending upon need, to enhance information exchange and learning. In Scotland, we have been fortunate over the past 10 years with the development and now everyday clinical availability of the Scottish Care Information-Diabetes Collaboration (SCI-DC), a shared patient record for diabetes management straddling both primary and secondary care, incorporating retinal and podiatry screening. All biochemical and clinical data are on an on-line shared system for all professionals treating diabetic patients (www.sci-diabetes.scot.nhs.uk). An example of the data available for all diabetic patients in the 14 individual Health Boards in Scotland is illustrated in my own region of Fife. In the 50-60 age group for type 2 diabetes, the mean BP is 132/79 mmHg and the mean cholesterol is 4.4 mmol/l, reflecting the evidence based use of anti-hypertensive and lipid lowering therapies. It is now said that type 2 diabetic patients have better blood pressure and cholesterol levels than their non-diabetic counterparts. More extensive information for Scotland as a whole is available at www.DiabetesInScotland.org.

In conclusion, the tools are there to continue to improve the management of diabetes and its complications in all areas of the UK provided the proper infrastructure is put in place.
References