

Diabetes: new approaches to common challenges



Dr Gregory C Jones speaks to, Hannah Wilson, Commissioning Editor:

Greg Jones is a consultant physician in general (internal) medicine, diabetes and endocrinology at Western Infirmary and Gartnavel General Hospital (Glasgow, UK), appointed 2001. He is Honorary Associate Clinical Professor at the University of Glasgow (Glasgow, UK). He graduated in medicine from the University of Dundee (Dundee, UK) in 1991, and undertook general medical training in Coventry (UK) and specialist training in Edinburgh (UK). He was a Wellcome Clinical Research Fellow at Edinburgh University. Dr Jones's principal research interests are pharmacotherapy in Type 2 diabetes, service delivery and in-patient diabetes care. He has written several papers in this field. Dr Jones has a wide experience as a leader in medical education. He was previously training program director for diabetes and endocrinology and is currently Associate Director of Medical Education, Academic Foundation Programme Director and Chair of Academic Foundation Medicine for Scotland.

Q Please could you give us an overview of your professional background to date?

I graduated in 1991 from Dundee University (Dundee, UK), I then worked in the Midlands for 2 years before coming to Edinburgh to become a specialist registrar in diabetes. I also had a Wellcome Trust fellowship at Edinburgh University (Edinburgh, UK) before moving to Glasgow to become a consulting physician and diabetologist 13 years ago at Gartnavel Hospital (Glasgow, UK). I am also an honorary associate professor of medicine at Glasgow University.

Q What originally drew you to specialize in diabetes?

I first got a bit of experience of diabetes when in Coventry (UK) working with a diabetologist there. I was struck by the fact that it's a chronic disease that can affect any part of the body and can affect anyone from very early life to end of life. I was interested in the thought of having patients that you could look after through their whole life from adolescence, pregnancies, work and up into retirement. The fact that it is such an important and common disease that has different manifestations and has such an impact on both healthcare resources and people's lives made it seem to me a very important disease that was worthwhile getting involved with. I did particularly like the idea that you could have patients that you could look after for a long period of time. It's a disease that wasn't going to go away so you can get a relationship with your patients that you don't get with some other conditions. I've got some patients that I've been looking after for 13 years, since they were 14, and now they've got children of their own. There aren't many conditions where you can get that sort of relationship.

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Q What do you think has been the biggest achievement of your career to date?

I'm very excited about some of things we are doing now looking into the dangers and effects of hypoglycemia. We've got a very large diabetes database that has over 3 million blood glucose results in it and we are getting very interesting evidence that hypoglycemia in patients who are in hospital is extremely bad from the point of view of mortality, length of stay and risk of readmission. That's opened up quite a big research area for us, which we are finding very exciting and fruitful at the moment.

Q Could you tell us some more about Forxiga®?

Forxiga (dapaglofazin, Bristol-Myers Squibb, Astra Zeneca, UK) is the first to market of a new class of antidiabetes drugs that work with a very novel mechanism. We've always thought before that the kidney is a victim of diabetes, it's a thing that sugar damages, but this is a drug that actually uses the kidney as a way of modulating blood glucose levels. The kidney filters blood glucose every day and the kidney has to reabsorb that blood glucose through the tubules to get it back into the system. What this drug does is to allow this glucose to not be reabsorbed by blocking a channel called the SGLT2 channel, the sodium-glucose uptake channel. It's a novel way of using the kidney to get rid of some of the excess glucose in diabetes, it's a completely new target. Previous drugs have always really been about insulin secretion, amount and action, and this is a completely new and novel way of dealing with the problem of blood glucose.

Q What will the changes to the Scottish Medicines Consortium guidelines regarding Forxiga mean for physicians in Scotland?

The difference with the new Scottish Medicines Consortium guideline is that we can now use this class of drugs with insulin. In our patients with Type 2 diabetes, one of the biggest problems is that the more insulin you give someone, the heavier they get. Just bumping up doses of insulin, although it will get blood glucose down, has real downsides from the patient's point of view, and also from the doctor's, as weight will go up. This drug works in a completely noninsulin-dependent manner to get blood glucose down. As you lose blood glucose you also lose calories so weight drops as well. This is a really exciting adjunctive therapy, something we can add on to

insulin and the new license allows us to give it to our Type 2 diabetes patients as an add on drug to try and get their glucose under control without the added side effect of weight gain.

Q Do you think treatment combinations such as those possible with Forxiga are where the future is headed in terms of diabetes care?

Absolutely! We know that monotherapy in diabetes is only effective for a period of time and that, a bit like blood pressure, there are numerous approaches that can be used at any one time to achieve blood glucose control that's maintained because as your diabetes career progresses, control will worsen if you don't escalate therapy. So, combination therapy targeting different defects and different areas in diabetes are the future of diabetes therapy. This is already being done to a certain extent but as we get new drug classes coming along it gives us the opportunity to use combinations to get better control earlier and for longer.

Q Are there any drugs in the pipelines that you're particularly excited about?

We've already got experience with drugs that affect the gut hormone systems, the incretin type drugs like DPP4 inhibitors, known as gliptins, and injectable therapies, the GLP therapies, which we can now use alongside the SGLT2s so we've more recently got a much bigger armory of drugs we can use against diabetes. It wasn't that long ago that we really only had metformin, sulfonylureas and insulin so we've certainly got a wider range of drugs already. And then coming through there are other interesting pipeline drugs and combinations of drugs, such as using insulin along with GLP-type therapies in order to try and target different areas of diabetes. We are now in a much more exciting time for diabetes than we were in the not so distant past.

Q You have also been involved in diabetes patient education groups. What do you see as the role for such groups?

We know in Type 1 diabetes that the most important thing is empowerment and giving the patient the tools they need to control their own blood glucose. That requires the patient to have numerous skills and tools to be able to do that. These tools are things like insulin pens, insulin pumps, blood glucose monitoring systems but the skills are the important thing they need to use these tools and the ability to make sense of

the data they are getting from the blood glucose levels and then adjust the insulin they're going to give themselves in order to meet the needs of the day. We've come a long way recently in the respect that in the past it was all one on one education it was quite bitty, people did different things. But now it's all about structured education so we teach people, normally in groups, we have a proper curriculum for what they need to learn, we use validated methods of teaching, DAFNE is the most famous example of this. We validate what we are doing and things that represent a real shift in the way that we can empower patients to be able to manage their own diabetes.

These sorts of things are going to be coming in for Type 2 diabetes too; we have programs such as DESMOND, where we can give patients a lot more information so they can take control of their diabetes. And not only will this have an effect on blood glucose levels, it also, and possibly more importantly, gives control back to the patient, it's no longer them being told what to do but them having control and power over their diabetes. It's about people being able to make their own decisions and choices, which makes people a lot happier about how they can coexist with their diabetes.

Q Is the psychosocial side of diabetes something that you are quite interested in?

Absolutely, we have done some work locally that has shown how common anxiety and depression is with diabetes. In our clinic, a third of patients we screened using a depression–anxiety score had a high score for depression and anxiety, so these are common coexisting conditions. If we can empower patients, we are quite hopeful that that will reduce the levels of diabetes–anxiety as patients feel more in control of their diabetes and feel less that their diabetes is in control of them

Q The 2013 Diabetes UK estimate attributed 10% of NHS Scotland's annual costs to diabetes. In your opinion, is current diabetes spending effective?

I think Scotland is quite advanced in the way it organizes its care, we have good diabetes networks and a well-structured approach, particularly between primary and secondary care. However, we need to keep improving this because it's very important that we have our care streamlined and organized between primary and secondary. The majority of patients with diabetes are looked after in primary care and

so we need to start thinking about how we can target those resources more cleverly to get the best value for money from them. We are probably spending too much money on blood glucose monitoring in certain areas in people who aren't benefiting from it. It's not to say that people shouldn't be able to blood glucose monitor but it's about finding the right person to use the right tool so we have to be smart about ensuring that we keep individualized care but go about it in an evidence-based and effective manner.

Q Where do you envisage diabetes care in Scotland progressing over the next 5–10 years?

I think it will be a lot more anticipatory care in that we will be trying to stop the burden of diabetes that causes people to be admitted to hospital with foot complications, heart disease and poor control by trying to anticipate those sorts of patients and trying to catch them early in the community before they come to harm. This is part of the work we are doing in looking at blood glucose patterns in patients and trying to predict people who will come to harm so that we can target resources at them in an anticipatory manner. I think that's one of the things we will definitely have to look at – anticipatory care. That will involve having outreach into the community rather than being reactive when people come to harm and then come to secondary care.

Obviously we want to try and prevent diabetes by reducing risk factors but this is more about specifically targeting high-risk individuals for appropriate therapy in a slightly smarter way than just using one-size-fits-all targets so that you have an individual and you decide what that individuals' targets should be rather than applying targets across a whole population.

Q You talk about individualization; do you think any of the genomic advances being made will come into play here?

They do have small impacts, we know from very rare types of diabetes that some of these respond very differently to drugs and in some of the more common types of diabetes, especially Type 2 diabetes, we may be able to get some genetic ideas about how we target therapy but that's been quite disappointing in other areas, such as warfarin. It's been slightly disappointing so far, this genetic idea of individualizing therapy but as we know more about the genetics of diabetes

it is quite possible that it will help us to target therapies, some people might respond better to certain therapies than others once we know a little more about their genotype.

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