JDRF briefing: The future of diabetes care, treatment and prevention

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This briefing has been prepared by JDRF in advance of the adjournment debate on the future of diabetes care, treatment and prevention.

JDRF is the world's leading type 1 diabetes research charity. It funds research to cure, treat and prevent type 1 diabetes.

Background

People with type 1 diabetes rely on taking insulin every day just to stay alive, until the cure is for the condition is found. It normally strikes children but can strike at any age. Type 1 diabetes affects about 400,000 people in the UK, 29,000 of them children. Type 1 diabetes cannot be prevented, and is not linked to lifestyle. There is no way to avoid it.

With this type of diabetes, a person's pancreas stops producing insulin. It occurs when the body's immune system attacks and destroys the insulin-producing cells in the pancreas.

Type 1 diabetes has a life-long impact on those diagnosed and their families. A child diagnosed with type 1 diabetes at the age of five faces up to 19,000 injections and 50,000 finger prick blood tests by the time they are 18. Effective control of blood glucose levels is a key factor in avoiding future complications and reducing costs. Access to diabetes technology is crucial to help better manage the condition.

The future of diabetes care: Better access to technologies and treatments

Diabetes technology can be life changing. Flash glucose monitoring for example reduces the need for finger-prick testing and shows trends in blood glucose levels, which can improve management of the condition.

Continuous glucose monitoring (often referred to as CGM) can help maintain target blood glucose levels, and limit the risk of hypoglycaemia if they are used on a daily basis (ie at least 80 percent of the time). They can provide peace of mind for parents as they feature an alarm which can be set to go off when a child's levels get too low or high.

Unfortunately, people with diabetes face a postcode lottery across the UK when it comes to access to technology that can help improve and manage their condition.

On the 1st of November 2017, the Freestyle Libre, a flash glucose monitoring device, was made available on the NHS Drugs Tariff, which means that in principle it is available to people with diabetes on NHS prescription. However, it is up to Clinical Commissioning Groups to decide whether to make the Libre available on the NHS and under what criteria.

At least 53 CCGs have so far agreed a policy for prescribing the Freestyle Libre, and many more are currently reviewing the situation. JDRF is encouraged by those CCGs which have reviewed their policies quickly and agreed to fund the device, however JDRF believes that flash glucose monitoring devices should be made available on the NHS to any adult or child

with type 1 diabetes who wants and would benefit from one, and to people with other forms of diabetes when intensive insulin therapy becomes necessary.

NICE has issued statements detailing when CGM may be suitable for someone with type 1 diabetes, however there is no statutory obligation on CCGs to provide funding for the technology, though some CCGs do have policies for prescribing it in certain circumstances.

Insulin pumps are an increasingly common treatment for type 1 diabetes. An insulin pump delivers insulin every few minutes in tiny amounts, 24 hours a day. Insulin pumps reduce the need for multiple injections and give the user the ability to make smaller, more accurate adjustments to insulin delivery.

NICE has produced Technology Appraisal Guidance on the use of insulin pumps for people with type 1 diabetes (TA151), however uptake and use of insulin pumps is still quite slow. The most recent National Diabetes Audit, published in July 2017 showed that whilst overall uptake of insulin pumps had increased, there were still large variations in access. A number of NHS Trusts only have 1 in 20 people or less using an insulin pump, compared to some Trusts that provided access to almost 7 out 10 people.[1]

The future of diabetes care: Hope for the future – the 'artificial pancreas'

JDRF is leading on the design of an artificial pancreas, which will change the lives of those affected by type 1 diabetes. The artificial pancreas is in advanced human trials and the work in the UK is being led by Dr Roman Hovorka at the University of Cambridge, with funding from JDRF.

An artificial pancreas is a piece of technology that could do some of the job of a healthy pancreas, providing exactly the right amount of background insulin to the body as it's needed. This then removes some of the time and effort that goes into managing type 1 diabetes.

The artificial pancreas consists of a continuous glucose monitor, a computer programme and an insulin pump that work together to automatically control background insulin levels.

The system currently being developed by Dr Hovorka's team at the University of Cambridge would be able to take over much of the management of insulin delivery throughout the day and night, and keep blood glucose levels in target range for longer periods of time.

If the NHS access issues to today's type 1 diabetes technology can be addressed, a path can then be cleared for the artificial pancreas.

The future of diabetes care: Hope for the future – prevention

JDRF's researchers internationally are working on ways to prevent and ultimately find a cure for type 1 diabetes.

[1] https://digital.nhs.uk/catalogue/PUB30027

To prevent type 1 diabetes, the immune system fault that lies at the heart of the condition needs to be fixed. Doing so would lift the burden of this condition from future generations, and help in the search for the cure.

Truly preventing type 1 diabetes means being able to stop the immune system going awry in the first place, stopping it from developing cells that can attack and destroy beta cells.

Thanks to research, much of it funded by JDRF, a great deal is now known about the genetic factors that can influence risk of type 1 diabetes, but as yet why some people with the same genetic risk factors go on to develop the condition, while others do not is not known. JDRF's primary prevention research is addressing this.

It also remains unknown what exactly triggers type 1 diabetes to develop in the first place. JDRF is supporting research to work out what, if any, environmental triggers could be setting off the autoimmune attack on the beta cells.

JDRF's secondary prevention research focuses on preventing people from needing insulin treatment. This work involved developing new treatments to retrain the immune system to stop the autoimmune attack or protect beta cells, or both.

Whether it's primary or secondary prevention, JDRF's research in this area focuses on understanding and controlling the immune system. Combined with a way to regrow beta cells, that same knowledge could lead us to a cure for type 1 diabetes.

In summary, having access to the right technology can be life changing. It can help people better control their condition and can save the NHS money through reduced complications. People with type 1 diabetes deserve to get the type 1 diabetes technology they want and need on the NHS. Research holds the key to both preventing and finding the cure for type 1 diabetes.

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