

Using CGM to improve glycaemic control

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Until recently, HbA_{1c} and fingerprick “diaries” were the only way for people with type 1 or type 2 diabetes and their healthcare team to assess glycaemic control. Sometimes, however, information from HbA_{1c} and fingerprick tests is just not enough to adjust treatment effectively. Continuous glucose monitoring (CGM) systems can offer people with the condition and their healthcare professionals another option and a broader window to look into their diabetes control.

CGM: The Liverpool experience

Like all diabetes centres worldwide, we struggle to support some people with diabetes. Despite our best efforts and those of people with the condition – as well as multiple consultations – glycaemic control often remains sub-optimal, or fluctuations in blood glucose levels continue to cause distress.

An opportunity arose within our diabetes centre to adopt CGM and use it as part of a care pathway for people with type 1 diabetes. This short article describes an audit of this process and its outcomes.

Aims of the clinical service audit

The main aim of this audit was to show that CGM system use can improve diabetes control in people with type 1

diabetes when standard blood glucose monitoring has failed, and to identify areas of hypo- and hyperglycaemia that previous blood glucose testing has missed.

Methodology

A care pathway and diet and lifestyle diary were developed to ensure continuity within the service and as an audit tool. This was discussed in detail with the person with diabetes and compared with the CGM graphs and blood glucose readings. Twelve people with type 1 diabetes on multi-dose insulin therapy completed the study.

HbA_{1c} results taken at 3, 12, 24 and 36 months were then compared with the pre-CGM HbA_{1c} results.

Main results

The information gained from the device showed in all people who had used it areas for improvement that would not have been seen with normal fingerprick testing, for example overnight blood glucose levels.

Prior to CGM the mean HbA_{1c} level of participants was 8.8% (73 mmol/mol). After 3 months, mean HbA_{1c} levels had reduced significantly to 8.0% (64 mmol/mol; $P=0.03$).

Mean HbA_{1c} levels at 12, 24 and 36 months were then compared with

the pre-CGM HbA_{1c} results to see if improvements were maintained over time. Results are as follows:

- At 12 months, mean HbA_{1c} level was 8.2% (66 mmol/mol; $P=0.005$).
- At 24 months, mean HbA_{1c} level was 7.9% (63 mmol/mol; $P=0.005$).
- At 36 months, mean HbA_{1c} level was 7.5% (58 mmol/mol; $P=0.002$).

Conclusion

A mean reduction in HbA_{1c} of 1.3% was observed over the 3 years without significant increase in weight or insulin dosage. HbA_{1c} levels continued to improve after completion of the 3-month care pathway and participants went back to their pre-study care regimens.

Although the study end-points were weight, insulin dose and HbA_{1c} level, it quickly became apparent when reviewing participants that reduction in hypoglycaemia and confidence in their blood glucose levels meant as much to them, if not more, than the reduction in HbA_{1c} level. Future audit of this service will therefore also include questionnaires on hypoglycaemia and quality of life.

A full article discussing this audit, the use of CGM systems and evidence of their use in practice, how they work and some of the systems available, will be coming shortly. ■

The IMPROVE™ Control Campaign

The Global Task Force on Glycaemic Control is a group of physicians and specialists in the field of diabetes from around the world that is working in collaboration with Novo Nordisk with the ultimate aim of identifying and developing practical solutions to the global problem of poor glycaemic control in people with diabetes. Since early 2008, the *Journal of Diabetes Nursing* has featured articles and submissions under the banner of IMPROVE™ Control – a global public awareness campaign focused on the need for improved control, as part of the Task Force’s work. Throughout 2010, the journal will continue to bring you articles on the barriers to good glycaemic control, and submissions from *you*, our readers, outlining the strategies you have used to help people with diabetes improve their control.

For example, perhaps you have implemented a new educational session in your area that has helped break down barriers to control, or maybe you have set up a new referral pathway that has helped improve HbA_{1c} levels. The *Journal of Diabetes Nursing* would like to help you share your practical solutions for improving control, no matter how big or small, with other nurses working in diabetes. We encourage you to take part in this global initiative by calling 020 7627 1510, or emailing jdn@sbcommunicationsgroup.com.

