

Innovating structured education for people with type 1 diabetes: www.Bertieonline.org.uk

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Citation: Partridge H, Shaban C, Weiss M (2017) Innovating structured education for people with type 1 diabetes: www.Bertieonline.org.uk. *Journal of Diabetes Nursing* 21: 255–8

Article points

1. Although structured education for people with type 1 diabetes is widely available, only a small percentage actually attend. This may be due to reasons, such as inability to take time off work, or anxiety about face-to-face group training.
2. In order to increase access to structured education, a team at the Royal Bournemouth Hospital developed a free online version of BERTIE (www.bertieonline.org.uk), which follows the BERTIE curriculum.
3. In the first 6 months after the launch of the online course, over 1800 individuals have registered on the site, with an average dwell time of 57 minutes per module. Further assessment will be carried out after 1 year.

Key words

- BERTIE
- Online diabetes education
- Type 1 diabetes

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Structured education for people with type 1 diabetes is an absolute necessity, but sadly it is not always a reality. There are many reasons why people are unable to attend structured education courses, such as concerns about cost or time off work, or worries about having to partake in group work. Furthermore, often people with type 1 diabetes may not be aware that such courses exist. This article introduces a free online platform offering structured education following the BERTIE (Beta Cell Education Resources for Training in Insulin and Eating) curriculum, which may avoid some of the barriers mentioned above. This article will discuss the rationale for the introduction of this online courses and will present 6-month user data. Future plans for the course will also be outlined.

Living with type 1 diabetes requires skill, dedication, time and perseverance. Learning to think like a pancreas is not only challenging, but also a life-long commitment. NICE (2016) recommend that all people with type 1 diabetes are offered an evidence-based structured education course within the first 6–12 months of diagnosis, where they can learn the necessary skills to self-manage their diabetes. The number of people actually able to attend these courses, however, is woefully inadequate. The National Diabetes Audit data for 2014–15 (NHS Digital, 2016) suggests that only about 6% of the eligible population have access to, or have attended, such a course.

The reasons for this inequity are multiple and sit partly with the healthcare providers and commissioners, and partly with the target audience, as described by Pender (2012), see *Table 1*, overleaf. Providing sufficient courses, such as BERTIE (Beta Cell Education Resources for Training in Insulin and Eating)

and DAFNE (Dose Adjustment for Normal Eating), requires significant financial input, as well as time and expertise from dedicated, trained healthcare professionals. NICE (2015) provide a costing statement for commissioners wishing to develop and support these essential educational tools.

From the perspective of a person with type 1 diabetes, the course requires a commitment of 4 days' attendance and group work with other people with type 1 diabetes. Furthermore, many people with type 1 diabetes may not even have an awareness that such courses exist. Harris et al (2017) eloquently describe the barriers to uptake of diabetes education. For example, it is possible that educational attainment, employment status and gender play a role in influencing attendance.

BERTIE at Royal Bournemouth Hospital

At the Royal Bournemouth Hospital, we have been running the QISMET (Quality

Table 1. Barriers to attending structured education courses.

Reasons people with diabetes do not attend structured education	Reasons structured education not offered by HCP
<ul style="list-style-type: none"> ● People believe that diabetes is well controlled. ● People “know enough about their diabetes”. ● Lack of information about courses provided. ● People unaware that courses exist ● Difficult to find time to attend ● Cost of travel ● Cost of time off work ● Physical disability ● Too far to travel ● Language problems ● Child care commitments ● Concern about understanding the course content ● Concerns about group work 	<ul style="list-style-type: none"> ● Courses not provided locally ● Long delays in availability due to capacity ● HCP not fully conversant with course content ● HCP not confident in encouraging course content

HCP=healthcare professional.

Institute for Self Management Education and Training) accredited BERTIE course for 18 years. This comprises a curriculum for group education for 4–8 people with type 1 diabetes over 4 consecutive Mondays, delivered by senior diabetes educators. Knott and colleagues presented at Diabetes UK in 2012 demonstrating the effectiveness of the course over a 5-year period in a cohort of 405 people with type 1 diabetes (Knott et al, 2012). Over the years we have demonstrated a consistent improvement not only in biochemical measures of diabetes control (HbA_{1c} reduction from 73 mmol/mol [8.8%] to 69 mmol/mol [8.5%]; $P<0.04$), but also a reduction in the need for third-party assistance due to hypoglycaemia; 57% of participants with reduced hypoglycaemia awareness regained awareness and there was a 74% reduction in people reporting the need for third-party assistance for hypoglycaemia in those who reported at least one previous episode. Perhaps most important, however, is a demonstration of improvement in measures of psychological distress in those living with type 1 diabetes, with a reduction in

PAIDS score (Problem Areas In Diabetes Scale [Welch et al, 1997]) from 21 to 16 over 1 year ($P<0.01$).

Introducing BERTIEonline.org.uk

In order to increase access to structured education locally and nationally, we developed an online version of BERTIE (www.bertieonline.org.uk), which was released in September 2016. This is a free platform allowing access to structured education for anyone with access to the internet via a computer, mobile phone or tablet. The programme is divided into 3 modules:

- What is type 1 diabetes?
- Carbohydrate counting
- Managing diabetes in real life.

These modules follow the curriculum of the formal face-to-face BERTIE programme and each module follows a path introducing the concepts of using and adjusting insulin doses, correcting doses for high and low blood glucose and what to do when things seem out of control. Videos, YouTube clips, and quizzes and challenges are used to engage the user in real-life scenarios mimicking the techniques we would use in BERTIE. *Figure 1* (overleaf) shows the homepage of the online course.

Advantages and disadvantages

While this format does not offer the benefit of direct interaction with healthcare professionals and peer support, which is a potential disadvantage, it has many advantages, with a number of opportunities to share experiences, thoughts and feelings online. The online platform is available at all times of day and night and can be referred to whenever necessary and repeatedly, therefore it can be used as a refresher when required. We also encourage healthcare professionals and carers of those with type 1 diabetes to increase awareness and knowledge around this very complex condition.

In Wessex, we have ensured that all diabetes and endocrine trainees have completed the BERTIEonline certificate. We are also looking at the possibility of introducing it into the nursing and medical student curricula. There is enormous potential to use this resource as a

teaching aid for primary care, nursing homes, allied health professionals and in the work place.

Interaction with the online course does require commitment, time and dedication from the end user and this engagement can be challenging. A potential disadvantage of relying on online materials is that it does require self-motivation, numeracy and literacy skills, and this may be a barrier for some people.

Streetwise and Lifewise

The role of BERTIEonline is not to replace the accredited structured education programmes essential to support people with type 1 in their day-to-day lives, but it is an adjunct providing additional resources. The aim of the programme was to introduce not only the BERTIE curriculum, but also other areas of interest that were suggested following a user questionnaire. This was sent out locally to all people with type 1 diabetes, including our cohort of young adults and a focus group held to assess content, language and relevance.

The diabetes online community (DOC) hosted a TweetChat to specifically identify what areas of diabetes management should be covered in such an education tool. To this end we introduced two further specialist areas.

BERTIE-Streetwise

BERTIE-Streetwise (www.BERTIE-streetwise.org.uk) is specifically aimed at young adults aged 16–21 with type 1 diabetes (see *Figure 2*). As described in a review by Monaghan et al (2015), this cohort typically find type 1 diabetes a significant challenge and struggle to engage both with their diabetes and their healthcare professional team. We aimed, therefore, to introduce topics that are relevant to this group and provide it in a safe environment that can be entirely anonymous, but also encourages the user to explore more about their own diabetes by linking the areas on Streetwise (alcohol, sex and contraception, festivals, exam stress, leaving home) back into the BERTIE modules and therefore allowing these young adults to explore the concepts of structured education by following links from sites they chose to engage with.

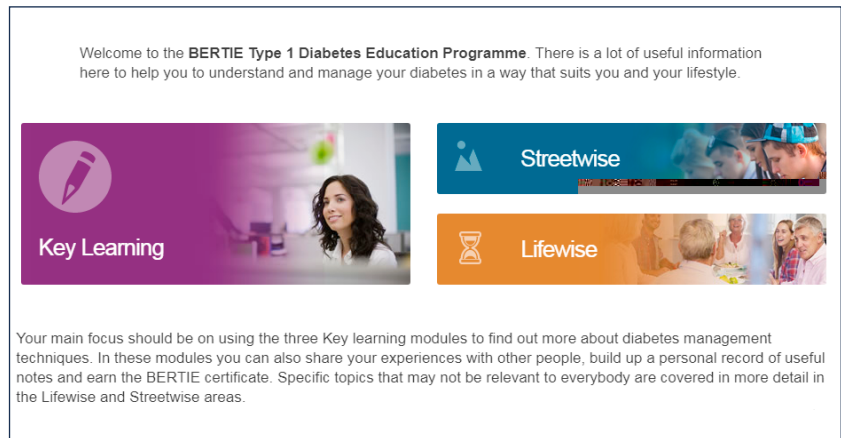


Figure 1. Home page of the BERTIEonline training website.

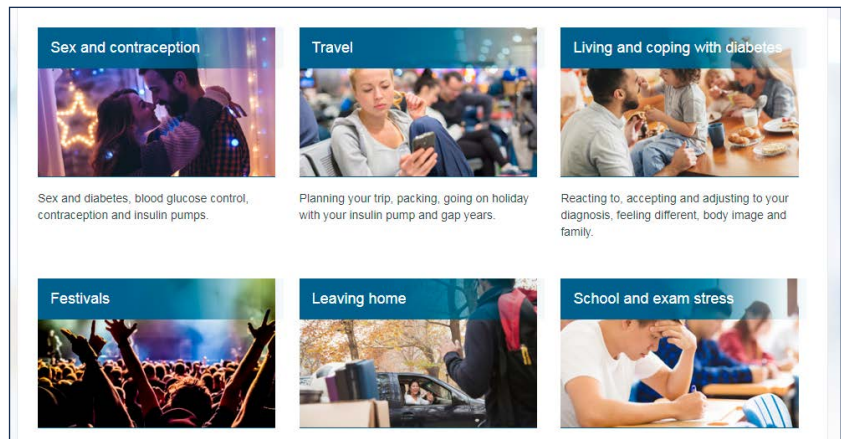


Figure 2. BERTIE-Streetwise.

Governance is provided by the BERTIE team at the Royal Bournemouth Hospital and with the website developer. All comments and feedback made on the website are immediately emailed and flagged to the team and can be removed, if necessary. Also, built into the platform is also a facility for users to report incorrect or inappropriate comments. Technical questions or problems regarding the website are flagged directly to the website developer.

BERTIE-Lifewise

The second area is Lifewise (www.bertieonline.org.uk/lifewise), which was developed to look at areas aligned to structured education and which are closely linked. The topic considered most pertinent by our focus groups was the psychological aspects of diabetes. Living with a long-term condition, such as type 1 diabetes, carries with it psychological and emotional

“BERTIEonline aims to complement face-to-face education, not to replace it.”

stresses (Rubin, 2000) and the report *Minding the Gap* by Diabetes UK in 2008 recognised that in the UK the provision of diabetes specialist psychological support is lacking (Diabetes UK, 2008).

We developed a module to help the user explore the thoughts and feelings around what it means to live with diabetes and introduced some initial management strategies. It is essential to acknowledge the emotional sequelae to diabetes and how this affects thoughts, behaviours and feelings. The other subjects included in Lifewise include pregnancy, driving, insulin pumps, coming into hospital and getting older with type 1 diabetes. These are all subjects that can be relevant at different points in someone’s life with diabetes.

The first six months

In the first 6 months after the launch of the online course, over 1800 individuals have registered on the site, with an average dwell time of 57 minutes per module. Further assessment of the frequency of use, duration of each visit, comments and feedback will be assessed at the end of the first year after launch. The platform is widely publicised on social media and has been endorsed by Diabetes UK and Juvenile Diabetes Research Foundation. A 1-year research study to establish clinical outcome data from the course is currently recruiting.

The future for BERTIEonline

We plan to follow up the introduction of BERTIEonline with future modules, such as an animated education programme specifically designed for children at each of the three key stages of schooling. This will also be available to parents and carers and will also be accessible to schools and sports clubs etc. The possibility of translating BERTIEonline into other languages for use in other parts of the world and in cohorts in the UK where English is not the first language is also being explored.

Conclusion

Living with type 1 diabetes requires skill, time and perseverance. For a variety of reasons, only

a very small percentage of the population have access to, or attend opportunities for structured education to develop their knowledge and skill. For many years Bournemouth has offered evidence-based group education for people with type 1 diabetes and is therefore well placed to develop this free online resource available at a time and place convenient to people with diabetes, their families and carers, and healthcare professionals.

BERTIEonline aims to complement face-to-face education, not to replace it, and includes Streetwise specifically to engage young adults and Lifewise to offer supplementary topics, such as psychological aspects, insulin pump therapy and pregnancy. The first year outcomes are currently being evaluated and will be published in due course.

Acknowledgement

We are very grateful to The Monument Trust for their generous grant, without which this development would not have been possible. ■

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