Film prescriptions for diabetes education: Can new technologies help patients?

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A team from Swansea University has worked with a film company specialising in behavioural change to develop a series of short prescribed films featuring both clinicians and expert patients. The resulting product, PocketMedic, delivers educational and motivational messages and has been designed to be issued by both primary, secondary and community healthcare teams. In October 2016, Welsh Government funding allowed national access to a series of films about pre-diabetes, type 2 diabetes, type 1 diabetes and gestational diabetes, shared via simple links accessed via mobile phones, tablets and computers. In this short report, the authors discuss the development, deployment and evaluation of the PocketMedic system.

The current management of chronic conditions contains a paradox. During the early stages of disease there is a greater opportunity to reduce the likelihood of clinical endpoints that have high costs, both personally and economically. Despite this, given current systems and constraints, patients typically have less interaction with healthcare professionals in these early stages and may only have clinical reviews once or twice a year. Providing these individuals with an opportunity to become experts in their condition at an early enough stage in its natural history is, therefore, paramount.

Historically, in Wales, healthcare providers have deployed educational courses, such as the X-PERT programme for patients with type 2 diabetes. These courses remain the gold standard in this context and are supported by evidence of effectiveness and continuing quality control (Deakin and Whitham, 2009). However, despite best efforts, data from a 2015 Diabetes UK audit in Wales demonstrated that only 1.2% of the 183 348 people known to have diabetes at that time had ever attended a recommended course. This information reinforces the concept that taught courses need to be part of a wider solution rather than the sole way of providing education to people with diabetes. Therefore, since 2014, a team from Swansea University School of Medicine have been exploring possible solutions that are both cost-effective and, importantly, scalable.

Film prescriptions

Using film to deliver information is now commonplace. The current generation of smartphone and tablet users are no longer choosing to interact with paper-based, leaflet-style methods and typically search for required content through established internet search engines (Colledge et al, 2008). However, the vast amount of information available makes it difficult to know what is appropriate and applicable to an individual's health. Furthermore, it has not been established whether interacting with non-validated information in this manner impacts on ability to self-manage a chronic condition.

In 2014, a film company, eHealth Digital Media (EHDM), approached the diabetes services in Wales with a concept of developing both content and a platform for chronic conditions, including diabetes. EHDM's Creative Director, Kimberley Littlemore, has many years of experience making behaviour-changing films. Whilst working for the BBC in Africa for the charity Comic Relief, she was responsible for the

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Article points

1. In 2015, only 1.2% of 183 348 people in Wales with diabetes attended a recommended educational course.
2. The current generation of smartphone and tablet users are no longer choosing paper-based methods and typically search for required content online.
3. To address this, the PocketMedic platform has been developed to provide online education, and has since been rolled out in Wales.

Key words

- Film prescriptions
- PocketMedic
- Wales

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Page points

1. Six short educational films on diabetes were produced under the platform of PocketMedic in 2014, and a prescribing system was launched nationally in October 2016.
2. Among newly diagnosed people with type 2 diabetes, those who viewed the prescribed content (*n*=19) had a significantly lower HbA_{1c} than those who had access to, but did not view, the content (*n*=49), with a mean relative difference of 9.1 mmol/mol (0.8%; *P*=0.0008) between the groups.
3. The correlation between the number of films watched and the reduction in HbA_{1c} should encourage further film development as well as research into the delivery of structured education for the increasing number of people with diabetes.

production of an award-winning film in 2012 starring David Tennant, known for his role as Dr Who, which generated £5 million for the charity in 5 minutes.

EHDM's work is based extensively on self-determination theory, which states that, when individuals derive feelings of autonomy, competence and relatedness about a specific issue, they are more likely to change behaviour patterns. For health-related matters, autonomy allows patients to be at the centre of managing their condition, competence allows them to become experts in their condition and relatedness links the delivery of the content to their clinicians, such that they feel connected and part of a dynamic and trusted relationship beyond the clinical setting (Williams et al, 2009).

System development

A working group was established in the summer of 2014, including representatives from Swansea University, Diabetes UK Cymru, the Welsh Endocrine and Diabetes Society, Diabetes Research Unit Cymru, Abertawe Bromorgannwg University Health Board, Hywel Dda University Board and EHDM. This group generated six initial short films under the logo and platform of PocketMedic.

The content focused on basic information about diabetes and contained a number of commentaries from patients. The topics included an introduction to diabetes, medication and monitoring, and practical encouragement from people with diabetes. The films were then reviewed by patient reference groups in the localities described and by Research and Development teams from two separate Health Boards. Along with the films, EHDM developed a streaming-based delivery system that allowed healthcare professionals to easily prescribe the content, allowing patients to open the films on their personal devices.

System testing

Two large primary care settings within the same Health Boards were chosen to test the system. Feedback on both usability and film content was sought. Early feedback asked for more informative films, particularly about dietary adjustments, and so two more films were developed, focusing on diabetes and diet, and delivered by a dietitian.

Evaluation

Data on HbA_{1c} and total cholesterol levels before and after film prescriptions to patients were collected from the Health Boards piloting the programme. We observed that, among newly diagnosed people with type 2 diabetes, those who viewed the prescribed content (*n*=19) had a significantly lower HbA_{1c} than those who had access to, but did not view, the content (*n*=49), with a mean relative difference of 9.1 mmol/mol (0.8%; *P*=0.0008) between the groups (Rice et al, 2017). There was also a correlation between the number of films watched and the reduction in HbA_{1c} (*Figure 1*). Notably, the mean HbA_{1c} after the intervention period in the watchers was 49.8 mmol/mol (6.7%) compared with 60.5 mmol/mol (7.7%) in the non-watchers. No difference in cholesterol values was observed.

Films were prescribed to people of a wide variety of ages, and there was no significant difference in age between the watchers and non-watchers.

Deployment

Given the significant gaps in the ability to deliver educational and supporting content to large numbers of people with diabetes, the PocketMedic films and prescribing system were

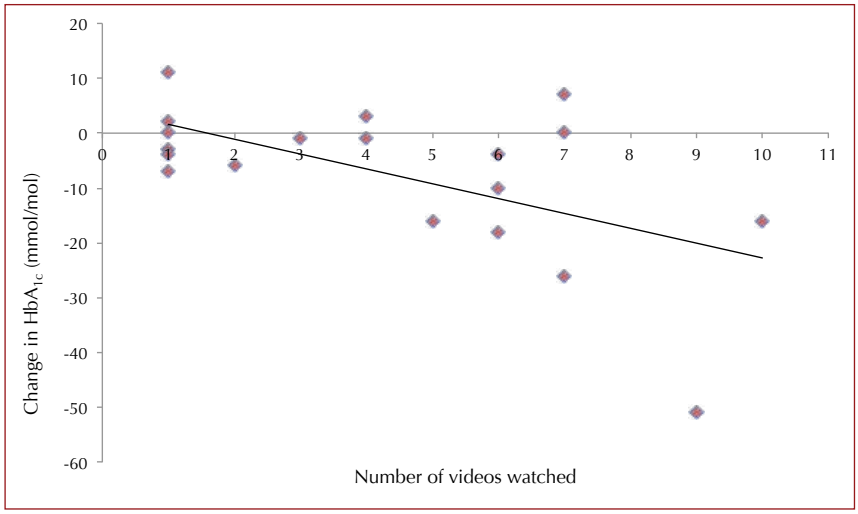

Figure 1. Association between the number of PocketMedic videos watched and HbA_{1c}.

launched nationally in October 2016 and are currently available throughout Wales, as well as in some health localities in England. Linked to the launch was the development of new content regarding type 1 and gestational diabetes. Additional films now cover topics including diabetic retinopathy, foot care, preconception care and driving, which are relevant for both type 1 and type 2 diabetes.

The original PocketMedic system was web-based and required healthcare professionals and patients to log in to access the videos. In 2017, however, a link-based delivery system was launched and the videos are now available to anyone who is given the appropriate URL (*Figure 2*). Users can click on the links or type them into their browser. As of 20 September 2017, a total of 3782 people have accessed the diabetes videos (*Table 1*). The wider use of the simple links by healthcare professionals has resulted in a significant increase in usage. In the period from 18 July to 20 September, the films have been accessed at a rate of 1000 users per month.

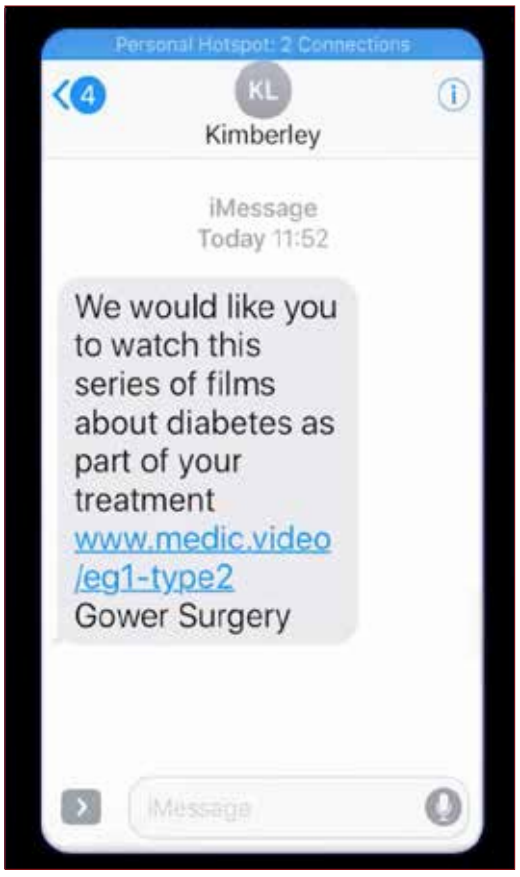

Figure 2. Sample invitation to watch PocketMedic films.

Table 1. PocketMedic Diabetes film series prescribed as of 20 September 2017.

Diabetes type	Web delivery	Links delivery	Total users
Type 2	704	1488	2192
Type 1	28	567	595
Prediabetes	44	273	317
Gestational diabetes	2	676	678
Total	**778**	**3004**	**3782**

Conclusion

Delivery of the necessary education for people with chronic conditions remains a significant challenge given that our patients interact with the health service infrequently and for short periods of time. The ease of use of technology, which is ever developing, allows for reliable education to be delivered directly to patients, streamed to their own electronic devices. Not only does this aid self-management of the condition for a wide range of ages, as shown in our pilot study, but it can also potentially help break the barrier for many patients who have poor health literacy.

Motivational and educational films encourage individuals' autonomy over their own condition, and our small study demonstrates the potential health benefits, with a significant reduction in HbA_{1c} levels observed in people who engaged with the diabetes films. The mean HbA_{1c} in those who watched the films was reduced to near normoglycaemic levels, which could have prescribing and cost implications.

The correlation between the number of films watched and the reduction in HbA_{1c} should encourage further film development as well as research into the delivery of structured education for the increasing number of people with diabetes. By delivering education via a wide range of means, including the use of technology, early on in the trajectory of an individual's chronic condition, we can aim to alter their disease progression by creating expert patients. ■

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