

DAFNE is agile and responsive—a beacon of best practice

JACKIE ELLIOTT ON BEHALF OF THE DAFNE EXECUTIVE BOARD

Abstract

The original Dose Adjustment For Normal Eating (DAFNE) randomised controlled trial (RCT) was conducted nearly 25 years ago.¹ It has transformed structured education for type 1 diabetes (T1DM) across the UK and is still evolving through its evidence base of further RCTs,²⁻³ and routine collection of real-world evidence (RWE),⁴ thereby proving that what works in a research setting, also benefits people with T1DM in the large number (more than half) of the hospital Trusts that have

adopted DAFNE countrywide.

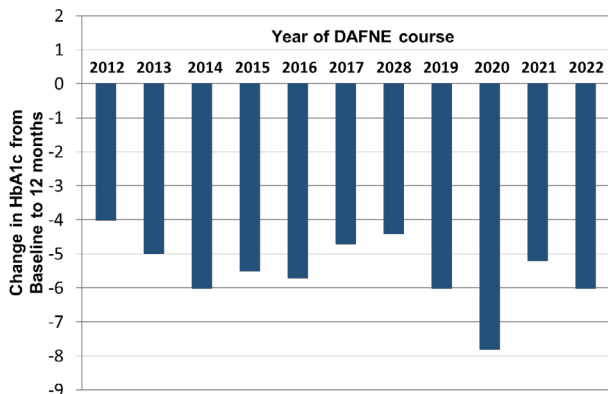
This review summarises the latest national audit data, and describes future work responding to the rapid changes in technology used in T1DM, how we are evolving to support people living with type 2 diabetes (T2DM), and adapting our learning materials in the digital age. Through the strength and depth of committed multidisciplinary healthcare professionals (HCPs) we have been able to expand our portfolio of learning materials available to DAFNE centres,

who pay a nominal annual fee of ~£5,000. By partnering with the Open University we now offer free accredited online learning to a wide range of HCPs, thereby helping to upskill the diabetes workforce at no extra cost to the NHS.

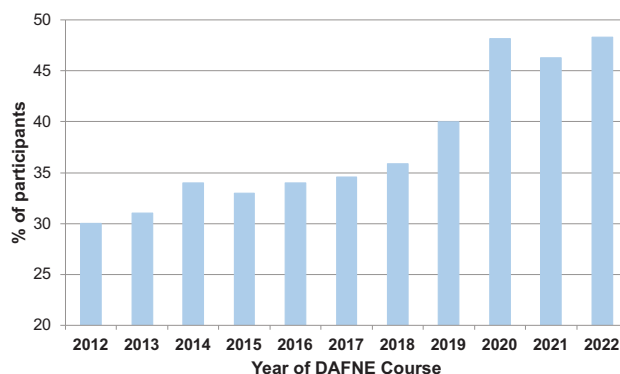
Finally, in a new and exciting collaboration with the Diabetes Technology Network (DTN) and industry colleagues, DAFNE offers free online training to all people living with T1DM to prepare them for closed-loop therapy.

Figure 1. HbA_{1c} outcomes 12 months following a DAFNE course compared to baseline

1a) Improvement in HbA_{1c} in those with a baseline HbA_{1c} >58 mmol/mol



1b) % of DAFNE graduates achieving the target HbA_{1c} of <58 mmol/mol at 12 months follow-up



Patient outcomes

HbA_{1c} improvements

We routinely collect biomedical data on DAFNE participants at baseline and one year after they complete a DAFNE course. Our RWE shows that for people with a baseline HbA_{1c} >58 mmol/mol we consistently show an improvement in HbA_{1c} of 4-8 mmol/mol at one year (Figure 1a). With much wider access to continuous glucose monitors (CGM) since 2020, a greater proportion of participants are attaining the goal of an HbA_{1c} of <58 mmol/mol at 1 year (Figure 1b). For many years DAFNE has offered different formats of training, remote versus face-to-face, insulin pump versus multiple daily injections (MDI), 1 week versus 1 day a week for 5 weeks, with audit data showing comparable outcomes across all these cohorts.

Reductions in severe hypoglycaemia and diabetic ketoacidosis

One of the strengths of RWE is that it includes participants who would normally be excluded from RCTs. In T1DM, RCTs often exclude people who have had either an episode of severe hypoglycaemia (SH) or diabetic ketoacidosis (DKA). However, previous research by Harris *et al.* has shown that acute complications such as SH or DKA provide an ideal opportunity to discuss the benefits of attending a DAFNE course to enable people with T1DM to learn to self-manage diabetes more effectively.⁵ Year after year audit data show that episodes of both SH and DKA are reduced by ~80% in the year following a DAFNE course, compared to the year prior, reducing costs of emergency treatments (Figure 2 a-c).⁶

Peer support

DAFNE participants and HCPs have long known of the tremendous benefits from peer support gained by sharing experiences, problem solving, normalising the mental burden of continual self-care and non-judgmental facilitation of discussions by educators specifically trained in group adult education. We have recently started to collect participant-reported outcome measures (PROMs). These show the expected improvements in confidence to self-manage diabetes and less distress, but also 82% report that their quality of life with regard to living with T1DM has improved one year after attending a DAFNE course (Figure 3). It highlights the continued benefit of this structured education programme.

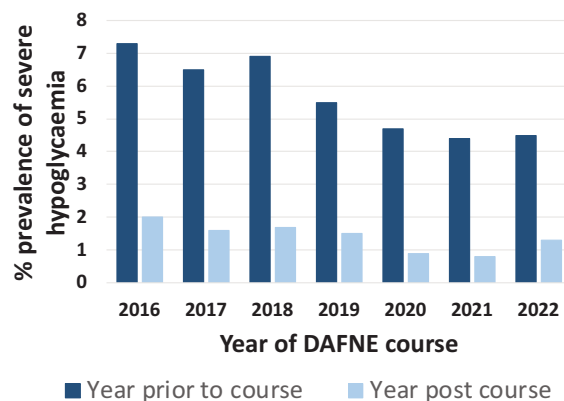
Closed Loop Essentials training

Hybrid closed-loop therapy is a potentially life-changing technology for people with T1DM. The recent NICE TA943 poses an exciting but challenging opportunity for the NHS workforce to implement.⁷ A collaboration with national experts from DTN, and financial support from industry colleagues, have enabled access to the DAFNE Closed Loop Essentials course for all HCPs across the country, as well as all people living with T1DM irrespective of whether or not their Trust is a member of the DAFNE collaborative. The course is designed to provide the essential safety knowledge to enable safer onboarding onto closed-loop systems, either from pump or pen therapy.

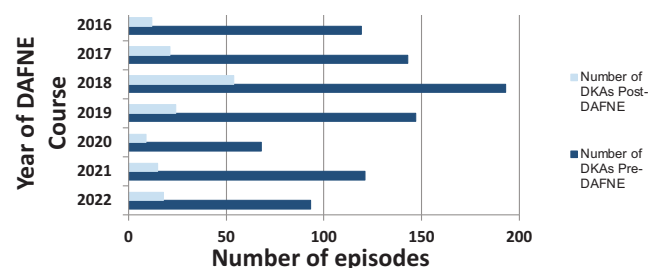
It consists of 4-6 hours of self-directed online learning, not

Figure 2. Reductions in acute complications in the 12 months following a DAFNE course compared to baseline

2a) Prevalence of severe hypoglycaemia



2b) Total number of episodes of Diabetic Ketoacidosis (DKA)



2c) % of participants with an episode of Diabetic Ketoacidosis (DKA)

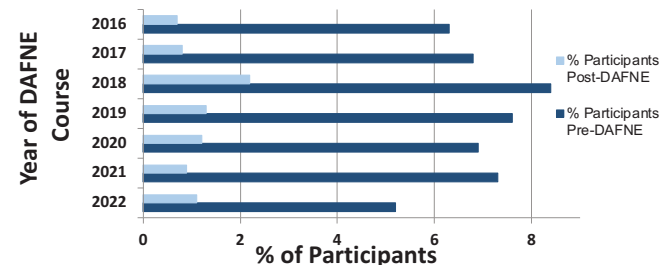


Figure 3. Improvements in self-reported Quality of Life with respect to living with T1DM

In relation to living with type 1 diabetes, over the last year has your quality of life improved? (n=115)

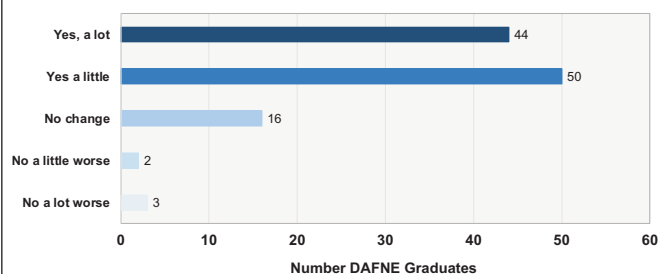


Figure 4. Confidence levels in moving to closed-loop therapy, rating and recommendation of the course



requiring any HCP input. The learning content is not system-specific, but instead focuses on the basic principles of how closed-loop systems work, time in range targets, what to expect as a user, avoiding and treatment of hypoglycaemia and also, most importantly, information about when users need to troubleshoot, check for ketones and possibly revert to pen therapy.

There is a knowledge check at the end of the module, very much weighted to safety aspects. Participants who pass the knowledge assessment are awarded a certificate, which can be sent to their HCP as proof of undertaking the online learning. It launched in April 2024, and in the first six months nearly 400 people completed it, aged 17 to 75 years plus, 58% female, from all quintiles of index of deprivation. On average it takes 3-5 hours to complete, with most people using a laptop (50%); approximately equal numbers use a PC, tablet or mobile phone instead. The outcomes are illustrated in Figure 4: feedback has been overwhelmingly positive.

The central DAFNE team provide each centre with a monthly report showing which of their patients have accessed the course and which have completed it successfully. This initiative will aid centres in better preparing the majority of their patients for closed-loop therapy, allowing them to spend more time with those individuals who cannot access the module or who find difficulty in completing it successfully.

T2DM training, introducing VICTOR

Multiple Daily Injections (MDI) of insulin can be utilised in both T1DM and T2DM. Over the years some people with T2DM have attended a DAFNE course to learn how to adjust their insulin doses according to carbohydrate content and activity levels.

Table 1. Outcomes of people with T2DM who have undertaken a DAFNE course

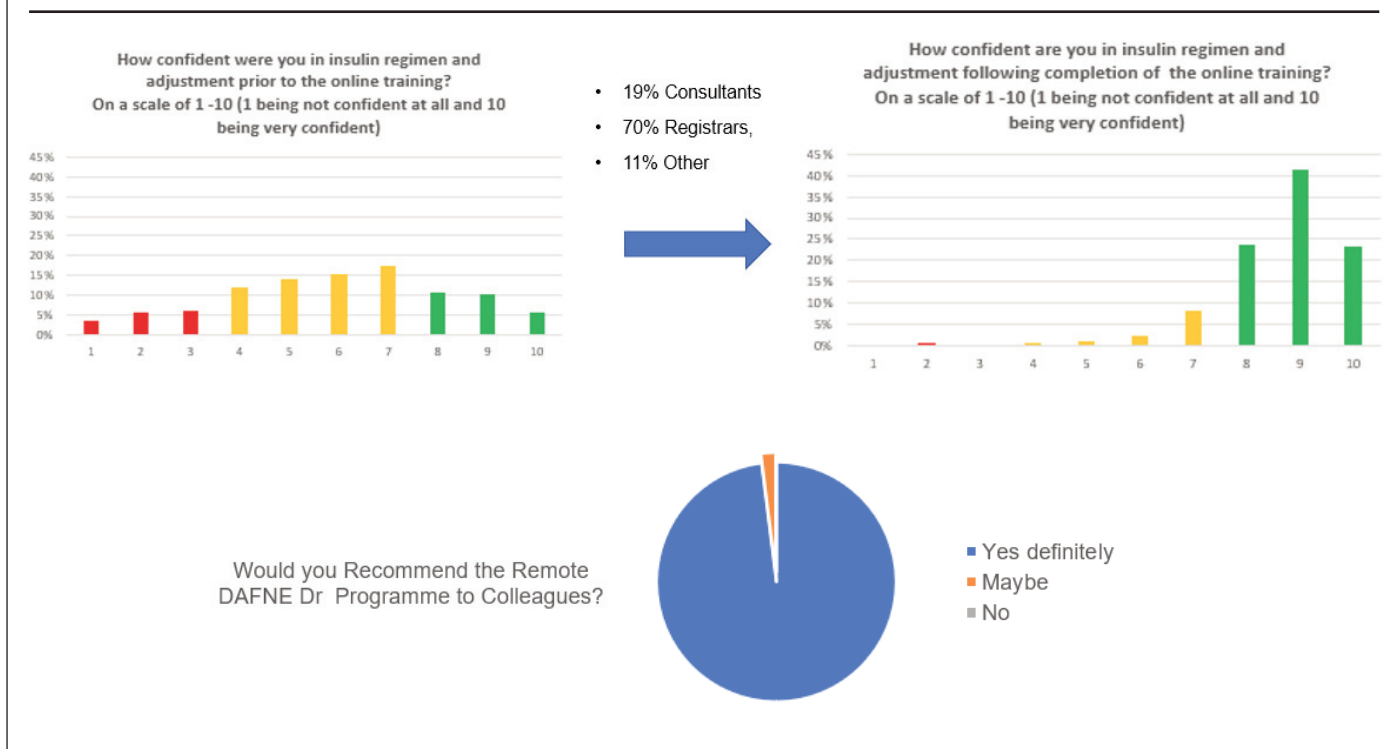
	Type 1 Diabetes	Type 2 Diabetes
Number (n)	11,084	129
Mean age (y)	41.6	55.8
Mean duration (y)	17.0	14.7
% Female	51.3	58.3
Change in HbA _{1c} if >58 at baseline (mmol/mol)	-5.1	-5.5
% <59 at baseline	26.5	10.9
% <59 at 12 months	33.2	20.2
Mean weight at baseline (kg)	78.0	92.3
Mean weight at 12 months (kg)	78.3	92.3
Change in weight (kg)	0.3	0.0

Table 1 illustrates the baseline demographics and biomedical outcomes of people with T2DM compared to T1DM, illustrating that not only do they achieve comparable improvements in HbA_{1c} of 5.5 mmol/mol, but also that this is achieved without significant weight gain. We are building on this evidence by creating a self-management course called VICTOR for people living with T2DM.

Healthcare training

DAFNE training for ALL diabetes specialist nurses, dieticians, pharmacists and allied healthcare professionals (including non-DAFNE centres)

Initially in response to the COVID pandemic, DAFNE has

Figure 5. Feedback from doctors completing the DAFNE doctor training programme (n=253).

transformed its training processes from entirely face-to-face to exclusively online. This revolution has facilitated much greater access and drastically reduced the costs of delivering training. The money saved has been reinvested into development of new materials for the benefit of all centres in the DAFNE collaborative. Since 2020, 400 DAFNE educators have been successfully trained to deliver the remote programme.

To help upskill diabetes specialist nurses and dieticians in non-DAFNE centres, DAFNE now offers complimentary access to the Open University modules in insulin dose adjustment and carbohydrate counting. This initiative has been well received and has been expanded to all allied healthcare professionals, such as pharmacists with a special interest in diabetes. For more information please visit the DAFNE website.⁸

DAFNE doctor training

Prior to the pandemic we routinely trained 30-35 doctors each year face-to-face. In the last four years more than 500 doctors have completed the RCP accredited course. They rate it at 3.8/4

stars, and would recommend it to their peers (Figure 5).

Future work

The year ahead promises to be an exciting time. In 2025 we will formally launch two major initiatives:

Closed Loop Optimisation

This new set of courses will replace our DAFNE pump course as more people move onto this life-changing technology. There will be four system-specific courses. Some of the content will be common to all systems, but there are differences between the systems which will be reflected in the learning. These courses will be available to all centres who are members of the DAFNE consortium, and designed to help users optimise their outcomes via group structured-education, focusing on behaviours as well as settings.

VICTOR

Varying Insulin and Carbohydrate To Optimise changes to Routine (VICTOR) is a new course specifically designed for those people with T2DM who are using MDI. VICTOR is designed to be inclusive

and accessible to those who may struggle with health literacy. Its creation has benefited by input from a range of HCPs and is very interactive in nature, comprised of 21 short videos, 6 new infographics and practical activities. Currently, 18 centres are piloting it. Based on participant and HCP feedback it will be revised in the first quarter of 2025 (if necessary), and then added to the DAFNE portfolio, all at no extra cost to DAFNE consortium members.

If your Trust is not a DAFNE centre but you would like to benefit from joining our not-for-profit collaborative, visit our website.⁹ Our central DAFNE team will help guide you through the process. If you are in an existing DAFNE centre, then thank you for continued support, and if you have any ideas for future developments please do let us know.



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Conflict of interest None to declare.

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