

FACT SHEET TWO

The Evidence Base for DAFNE

DAFNE has a solid evidence base. The programme has been developed over more than 25 years of rigorous research. [1, 2, 3, 4] This includes a randomised control trial in Northern Europe and a feasibility trial and economic analysis here in the UK.

The results of the DAFNE study were published in the BMJ [5] in 2002, and showed clinically and statistically significant improvement in:

- ✓ Glycaemic control, without increased severe hypoglycaemia.
- ✓ Quality of life.
- ✓ Treatment satisfaction.

Only 4 of the 141 participants in the feasibility study did not derive some benefit from DAFNE.

An economic evaluation of DAFNE by the York Health Economics Consortium showed that reduced complication rate expected of the observed improved diabetic control means DAFNE pays for itself within 5 years [6].

The following is a list of relevant references:

1. Mühlhauser I, Jorgens V, Berger M, Graninger W, Gurtler W, Hornke L et al. Bicentric evaluation of a teaching and treatment programme for type 1 (insulin-dependent) diabetic patients: improvement of metabolic control and other measures of diabetes care for up to 22 months. *Diabetologia* 1983; 25:470-6

Patients from 2 centres in Vienna and Dusseldorf were observed for 22 months following 5-day structured in-patient teaching in intensive insulin therapy. There was a reduction in HbA1c of around 1.5% and reductions in episodes of severe hypoglycaemia, emergency admissions to hospital and sick days off work.

2. Mühlhauser I, Bruckner I, Berger M, Cheta D, Jorgens V, Ionescu-Tirgoviste C et al. Evaluation of an intensified insulin treatment and teaching programme as routine management of type 1 (insulin-dependent) diabetes. The Bucharest-Dusseldorf Study. *Diabetologia* 1987; 30:681-90

Similar results were obtained in a RCT in Bucharest. The control group followed a similar knowledge based in-patient group programme, but was taught conventional insulin therapy.

3. Pieber TR, Brunner GA, Schnedl WJ, Schattnerberg S, Kaufmann P, Krejs GJ. Evaluation of a structured outpatient group education program for intensive insulin therapy. *Diabetes Care* 1995; 18:625-30

Adapted for out patient use in Austria there was a reduction of HbA1c of 1.2% subsequently up to 6 years.

4. Bott S, Bott U, Berger M, Muhlhauser I. Intensified insulin therapy and the risk of severe hypoglycaemia. *Diabetologia* 1997; 40:926-32

636 patients were studied in detail 1, 2, 3 and 6 years after attending a single course. The benefits on glycaemia were sustained for 3 years and partially for 6 and the effects on hypoglycaemia sustained throughout.

5. DAFNE Study Group. Training in flexible, intensive insulin management to enable dietary freedom in people with type 1 diabetes: dose adjustment for normal eating (DAFNE) randomised controlled trial. *BMJ*: 2002; 325:746

Presents the results of the UK DAFNE feasibility study. The results reveal that the approach pioneered in Germany can be successfully transferred to a UK healthcare setting and can improve glycaemic control. This approach also leads to significant improvements in treatment satisfaction, psychological well being and quality of life measures.

6. National Institute for Clinical Excellence. Technology Appraisal Guidance 60. Guidance on the use of patient education models for diabetes. April 2003. Available from www.nice.org.uk/cat.asp?c=68326

DAFNE and the economic evaluation were considered by NICE as part of the initial consultation for NICE Technical Appraisal 60, in which DAFNE is the only programme named as an example of high quality structured education.

7. Shearer A, Bagust A, Sanderson D, Heller S, Roberts S. Cost-effectiveness of flexible intensive insulin management to enable dietary freedom in people with Type 1 diabetes in the UK. *Diabetic Medicine* 2004; 21 (5):460-67

An economic evaluation of DAFNE by the York Health Economics Consortium showed that reduced complication rate expected of the observed improved diabetic control means DAFNE pays for itself within 5 years.

8. Rogers H, Turner E, Thompson G, Hopkins D, Amiel SA. Hub and Spoke model for a 5-day structured patient education programme for people with Type 1 diabetes. *Diabetic Medicine* 2009; 26 (9): 915-920

The study revealed reductions in HbA1c and severe hypoglycaemia along with improved quality of life, demonstrating that the hub and spoke method of delivery of DAFNE is a feasible and effective model of structured education service provision in units unable to develop a full DAFNE service due to resource issues.

9. Oliver L, Thompson G. The DAFNE Collaborative: Experiences of developing and delivering an evidenced based quality assured programme for people with Type 1 diabetes. *Practical Diabetes International* 2009; 26 (9); 371-377

10. Murphy K et al. Participants' perceptions of the factors that influence Diabetes Self-Management Following a Structured Education (DAFNE) programme. *Journal of Clinical Nursing* doi: 10.1111/j.1365-2702.2010.03654.x

11. McIntyre HD et al. Dose Adjustment for Normal Eating (DAFNE) - an audit of outcomes in Australia. *Medical Journal Australia* 2010; 192 (11): 637-640

12. Speight J, Amiel S.A, Bradley C, Heller S, Oliver L, Roberts S, Rogers H, Taylor C, Thompson G. Long-term biomedical and psychosocial outcomes following DAFNE (Dose Adjustment For Normal Eating) structured education to promote intensive insulin therapy in adults with sub-optimally controlled Type 1 diabetes. *Diabetes Research & Clinical Practice*. 2010; 89: 22-29

Follow-up of 104 of the 140 original DAFNE feasibility study cohort at 44 months post course show mean improvement in HbA1c from baseline was 0.36%. Quality of Life outcomes remained improved from baseline, with no difference between 12 and 44-month; revealing that the

impact of a single DAFNE course on glycaemic control is still apparent in the long term. Improvements in QoL and other patient reported outcomes are well maintained over approximately 4 years.

13. Lawton J; Rankin D. How do structured education programmes work? An ethnographic investigation of the dose adjustment for normal eating (DAFNE) programme for type 1 diabetes patients in the UK. *Social Science & Medicine* 2010; 71:486-93.

This observational and interview study explored how, and why, the group-based approach used on DAFNE courses enhances learning, promotes insulin dose adjustments and fosters diabetes self-care practices.

14. Rankin D; Heller S; Lawton J. Understanding information and education gaps among people with type 1 diabetes: A qualitative investigation. *Patient Education and Counselling* 2011; 83:87-91

This study draws on DAFNE patients' pre-course experiences to understand why they like and benefit from the comprehensive education provided on a DAFNE course.

15. Lawton J, Rankin D, Cooke D, Clark M, Elliot J, Heller S, for the UK NIHR DAFNE Study Group. Dose Adjustment for Normal Eating: A qualitative longitudinal exploration of the food and eating practices of type 1 diabetes patients converted to flexible

intensive insulin therapy in the UK. *Diabetes Research & Clinical Practice* 2011; 91:87-93.

This repeat interview study explored patients' food and eating practices after attending a DAFNE course. Whilst allowing more flexible eating, a DAFNE approach did not normally result in excessive or unhealthy eating. Some patients, however, came to see 'safe' and 'healthy' food as those with a low carbohydrate rather than low fat/calorie content.

16. Rankin D, Cooke DD, Clark M, Heller S, Elliott J. and Lawton J. (in press). How and why do patients with type 1 diabetes sustain their use of flexible intensive insulin therapy? A qualitative longitudinal investigation of patients' self-management practices following attendance at a Dose Adjustment for Normal Eating (DAFNE) course. *Diabetic Medicine* 2011, 28, 532-538

This repeat interview study explored patients' experiences of, and views about, implementing DAFNE in their everyday lives. Whilst patients preferred DAFNE to previous regimens many found they had to simplify aspects of their lifestyles to sustain this approach.

Conference Abstracts

1. O'Hara MC, Dinneen SF, Newell J, Coffey N, Byrne M, for the Irish DAFNE Study Group. Comparing the effect of 2 different methods of follow-up after structured group education on psychosocial measures in patients with Type 1 diabetes: the Irish DAFNE Study. Abstract accepted for oral presentation at the 47th European Association for the Study of Diabetes Annual Meeting, Lisbon, Portugal, 12-16 September 2011. *Diabetologia*, 2011, 54 (Suppl 1): S97

2. Dinneen SF et al. The Irish DAFNE Study Protocol: A cluster randomised trial of group versus individual follow-up after structured education for Type 1 diabetes. *Diabetologia*, 2011, 54 (Suppl 1): 533

3. Jackson P. What is the impact of DAFNE on outpatient secondary care resources? *Diabetic Medicine* 2011; **28** (Suppl 1) A70 (P138): 26

4. Mansell, Chater T, Cooke D, Emery C, Hopkins D, Lawrence I, Moore S, Thompson G and Heller S. A research database for structured diabetes education (DAFNE). *Diabetic Medicine* 2011; **28** (Suppl 1) A74 (P277); 27

5. Casey D, Murphy K, Lawton J, Brown F and Dinneen S. DAFNE is 'the best thing really for diabetes management... but you need to know to stick to it!' *Diabetic Medicine* 2011; **28** (suppl 1): 115

6. Kruger J, Brennan A, Thokala P, Fitzgerald P and Heller S. Incorporating psychosocial characteristics in cost-effectiveness modeling of Type 1 diabetes. *Diabetic Medicine* 2011; **28** (suppl 1): 117
7. Rankin D, Cooke D, Clark M, Heller S, Elliott J and Lawton J. Patients' experiences of, views about and perceived needs for support when implementing flexible intensive insulin treatment: a qualitative longitudinal study. *Diabetic Medicine* 2011; **28** (suppl 1): 117
8. Keen AJA, Gold A, Duncan E and Evans N. Dose Adjustment for Normal Eating (DAFNE) in routine clinical practice: who benefits? *Diabetic Medicine* 2011; **28** (suppl 1): 118
9. Thompson G and Taylor CD. Structured diabetes education: developing active user involvement. *Diabetic Medicine* 2011; **28** (suppl 1): 120
10. Thompson G and Taylor CD. External audit outcomes from a national structured education programme. *Diabetic Medicine* 2011; **28** (suppl 1): 122
11. Lawton J, Rankin D. and Heller S. How and why do structured education programmes work? A qualitative investigation of the Dose Adjustment for Normal Eating (DAFNE) programme for type 1 diabetes patients in the UK. *Diabetic Medicine* 2010, **27** (Suppl. 1) P264:115.
12. Taylor CD, Thompson G. Developing reliable quality assurance of structured education in Type 1 diabetes: experiences from The DAFNE Collaborative. *Diabetic Medicine* 2010, **27** (Suppl. 1) P287:121
13. Jackson P. Can the effectiveness of our DAFNE programmes be predicted? *Diabetic Medicine* 2010, **27** (Suppl. 1) P290:122
14. Cooke D, Kamps L, Hurel S. Access to structured education for people with Type 1 diabetes. *Diabetic Medicine* 2010, **27** (Suppl. 1) P292:123
15. Taylor CD, Thompson G. Training for peer reviewing: a vital component of Quality Assurance in Structured Education. *Diabetic Medicine* 2010, **27** (Suppl. 1) P304:126
16. Lawrence I, Crasto W, Jarvis J, Thompson G, Mansell P, Hopkins D, Amiel SA, Heller S. The impact of different basal insulin therapies in the DAFNE programme. *Diabetic Medicine* 2010, **27** (Suppl. 1) P399:154
17. Jackson P. Who is accessing DAFNE courses and are clinical aims being met? *Diabetic Medicine* 2009; **26** (Suppl. 1) A29:11
18. Sihota SS, Patmore J, Walton C. Referral of Type 1 diabetes patients to DAFNE. *Diabetic Medicine* 2009; **26** (Suppl. 1) P144: 81

- 19.** O'Hara MC *et al.* Evaluating self-management in Type 1 diabetes: design and baseline data from the Irish Dose Adjustment for Normal Eating (DAFNE) Study. The Irish Endocrine Society Meeting. Cork 6-7th November 2009. *Irish Journal of Medical Science* 2009; **178** (Suppl 10): P58
- 20.** Dinneen SF *et al.* Evaluating self-management support in Type 1 diabetes: design and baseline data from the Irish Dose Adjustment for Normal Eating (DAFNE) Study. Submitted to European Association for the Study of Diabetes. *Diabetologia* 2009; **52** (Suppl 1): S389
- 21.** Dinneen SF *et al.* (2009). A) Update on the Irish DAFNE Study. B) Profile of participants at baseline. C) Comparing ADDQoL and DSQoL quality of life tools. Seminar, Centre for Clinical Health Services Research and Development, 31st March 2009
- 22.** Lawrence IG, Hopkins D, Mansell P, Thompson G, Amiel S, Heller S. DAFNE (Dose Adjustment For Normal Eating) training delivered in routine clinical practice is associated with improved glycaemic control and a reduction in severe hypoglycaemia. *Diabetic Medicine* 2008; **25** (Suppl.1) P115: 72
- 23.** Hopkins D, Lawrence IG, Mansell P, Thompson G, Amiel S, Heller S. DAFNE (Dose Adjustment For Normal Eating) training delivered in routine clinical practice is associated with significant improvements in measure of quality of life and psychological distress. *Diabetic Medicine* 2008; **25** (Suppl.1) A47:16
- 24.** McGowan A *et al.* The Dose Adjustment for Normal Eating (DAFNE) education programme decreases frequency of severe hypoglycaemic episodes, doses of basal insulin and reported hypoglycaemia unawareness. Poster at Irish Endocrine Society Meeting, Kildare, 7th November 2008
- 25.** C Breen *et al* (2008). Biomedical and Psychosocial outcomes 12 months following dose adjustment for normal eating (DAFNE) training in routine clinical practice in Ireland. Accepted for poster presentation, Therapeutic Patient Education Conference, Budapest, 5th November 2008 – 8th November 2008
- 26.** McKillop-Smith A and Copland S: Reduction in Severe Hypoglycaemia and DKA following DAFNE. Occurrence of severe hypoglycaemia is less frequent following DAFNE education.
- DAFNE training delivered in routine practice in Aberdeen results in avoidance of admissions for diabetic ketoacidosis and severe hypoglycaemia. Any reduction in severe metabolic complications of diabetes is of major personal benefit to patients and has implication for health care cost savings. *Poster at Diabetes in Scotland Conference, Heriot Watt University, Edinburgh 7th October 2008*

27. Daly L *et al.* Initial experience with Dose Adjustment for Normal Eating (DAFNE) training in routine clinical practice in Ireland: biomedical and psychosocial outcomes at 12 months. Poster presentation, European Association for the Study of Diabetes Annual Meeting, Rome, September 2008.

28. Murphy K *et al* (2008). Qualitative research outcomes: DAFNE Collaborative Conference: Manchester: July 2008

29. Breen C, for the Irish DAFNE Study Group. Irish DAFNE Study: delivering structured follow-up. Presented to the DAFNE Collaborative Meeting, July 2008

30. Hyland, L.A. DAFNE Ireland: Baseline and Prospective Data. Oral presentation on the findings of the preliminary analysis of the Dose Adjustment for Normal Eating (DAFNE) Ireland Data. Paper presented at the Health Psychology Seminar Series, Centre for Outcomes Research and Effectiveness, University College London, 16th November 2007

31. Hyland, L.A. & Clark, M. Preliminary Analysis of Psychological and Physiological Data from the DAFNE (Ireland) Programme. Paper presented at the Irish DAFNE (Dose Adjustment for Normal Eating) Study Conference, Galway, Ireland, 1st December 2007

32. Speight J, Amiel S, Bradley C, Heller S, James P, Oliver L, Roberts S, Rogers

H, Taylor C, Thompson G: The Dose Adjustment For Normal Eating (DAFNE) Trial: Improvements in HbA1C still apparent and quality of life benefits well-maintained at 4-year follow-up. *Diabetic Medicine* 2007; **24** (Suppl. 1) P224:95

33. The Irish DAFNE Study Group. Implementing and evaluating a structured education programme and a new model of ongoing care for Type 1 diabetes: the Irish DAFNE Study. Presented at the 31st Annual Meeting of the Irish Endocrine Society, Galway, November 2006. *Ir J Med Sci* 2006;175 (Suppl 2):30

34. Mansell P, Clarke P, Pownall N, Fenn L, Besant C, Wharmby S, Gazis A. Dosage Adjustment For Normal Eating (DAFNE) education programme. Improvements in HbA1c maintained for two years. *Diabetic Medicine* 2005; **22** (Suppl.2) A26: 7.

DAFNE Online is an independent community of DAFNE Graduates, Health Care Professionals, Management and friends and family of those with Type 1 diabetes. Please visit the website to find out more.

www.DAFNEonline.co.uk

For the latest information about DAFNE please check the website or email:

dafne@northumbria-healthcare.nhs.uk

www.DAFNE.uk.com