

Structured patient education: the Diabetes X-PERT Programme makes a difference

T. A. Deakin, J. E. Cade*, R. Williamst and D. C. Greenwood†

Nutrition & Dietetic Department, Burnley, Pendle & Rossendale Primary Care Trust, East Lancashire,
*Nutritional Epidemiology Group, Centre for Epidemiology & Biostatistics, University of Leeds, Leeds, †The School of Medicine, University of Wales Swansea, and ‡Biostatistics Unit, Centre for Epidemiology & Biostatistics, University of Leeds, Leeds, UK

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Abstract

Aims To develop a patient-centred, group-based self-management programme (X-PERT), based on theories of empowerment and discovery learning, and to assess the effectiveness of the programme on clinical, lifestyle and psychosocial outcomes.

Methods Adults with Type 2 diabetes ($n = 314$), living in Burnley, Pendle or Rossendale, Lancashire, UK were randomized to either individual appointments (control group) ($n = 157$) or the X-PERT Programme ($n = 157$). X-PERT patients were invited to attend six 2-h group sessions of self-management education. Outcomes were assessed at baseline, 4 and 14 months.

Results One hundred and forty-nine participants (95%) attended the X-PERT Programme, with 128 (82%) attending four or more sessions. By 14 months the X-PERT group compared with the control group showed significant improvements in the mean HbA_{1c} (-0.6% vs. $+0.1\%$, repeated measures ANOVA, $P < 0.001$). The number needed to treat (NNT) for preventing diabetes medication increase was 4 [95% confidence interval (CI) 3, 7] and NNT for reducing diabetes medication was 7 (95% CI 5, 11). Statistically significant improvements were also shown in the X-PERT patients compared with the control patients for body weight, body mass index (BMI), waist circumference, total cholesterol, self-empowerment, diabetes knowledge, physical activity levels, foot care, fruit and vegetable intake, enjoyment of food and treatment satisfaction.

Conclusions Participation in the X-PERT Programme by adults with Type 2 diabetes was shown at 14 months to have led to improved glycaemic control, reduced total cholesterol level, body weight, BMI and waist circumference, reduced requirement for diabetes medication, increased consumption of fruit and vegetables, enjoyment of food, knowledge of diabetes, self-empowerment, self-management skills and treatment satisfaction.

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Keywords glycated haemoglobin, patient-centred care, randomized controlled trial, structured group education, Type 2 diabetes

Abbreviations BMI, body mass index; HDL, high-density lipoprotein; LDL, low-density lipoprotein; NNT, number needed to treat; OHA, oral hypoglycaemic agents; RD, individual appointments; SD, standard deviation

Introduction

Effective methods to deliver patient education and teach self-management skills that result in longer-term improvements to health are needed. The Diabetes National Service Framework

Correspondence to: Trudi Deakin, Nutrition & Dietetic Department, Burnley, Pendle & Rossendale PCT, Burnley General Hospital, Casterton Avenue, Burnley, East Lancashire BB10 2PQ, UK. E-mail: trudi.deakin@nhs.net

(NSF) [1,2] and the National Institute for Clinical Excellence (NICE) technology appraisal of patient-education models [3] make it clear that all Primary Care Organisations (PCOs) must offer structured education programmes to people with Type 2 diabetes. Primary care services will need to provide high-quality structured education programmes to those with diabetes in order to achieve the Performance and Planning Framework (PPF) target on practice-based registers [4,5].

A review of diabetes self-management education has found short-term (< 6 months) positive effects on knowledge, dietary habits and glycaemic control [6]. A meta-analysis has shown a decrease in glycated haemoglobin of 0.8% at immediate follow-up and 0.3% at 4 months or longer follow-up. Hence, the benefit of self-management education on glycated haemoglobin has been shown to wane between 1 and 3 months [7]. However, these reviews synthesized short-term studies that used different approaches and delivery methods.

The current study was undertaken to determine if any benefits from attending a patient-centred structured group diabetes education, based on the theories of empowerment and discovery learning, were sustained in the longer term. Consequently, a primary care structured group education initiative, The X-PERT Programme, for individuals with Type 2 diabetes was developed and assessed.

Patients and methods

Participants

Sixteen general medical practices, within Burnley, Pendle and Rossendale, Lancashire, UK were invited to take part in the study. Adults with Type 2 diabetes were identified from practice registers using the World Health Organization criteria [8]. Housebound patients and those with reduced cognitive ability were excluded. Included patients received a patient information leaflet.

Ethical approval was granted from the local ethics committee and written consent was obtained from each subject.

Randomization

Participants were randomized to intervention or control using random permuted blocks and sealed opaque envelopes.

Blinding

To maintain blind allocation, patient information leaflets stated that the study was to compare the effectiveness of an individual vs. group approach to diabetes education. Participants were therefore less likely to identify if they were in the intervention or control group. It was not possible to blind those delivering the interventions. Outcome assessments were carried out by a community nurse and a healthcare assistant blinded to treatment assignment.

Hypothesis

Primary care delivery of the patient-centred, structured diabetes education programme X-PERT for adults with Type 2 diabetes,

based on theories of patient empowerment and discovery learning, develops skills and confidence leading to increased diabetes self-management and sustained improvements in clinical, lifestyle and psychosocial outcomes.

Interventions

In addition to routine care, the control group received diabetes education and review with prearranged individual appointments with a dietitian (30 min), practice nurse (15 min) and general practitioner (10 min).

Members of the intervention group were invited to attend the X-PERT Programme. This involved six weekly sessions, each lasting 2 h (Fig. 1). Sessions were held in community venues with an average of 16 participants plus four to eight carers in each programme. The programme aimed to develop skills and build confidence, to enable patients to make informed decisions regarding their diabetes self-care. The X-PERT Programme was designed and delivered by a diabetes research dietitian (T.A.D.) who took on the role of a diabetes educator. The community venues were easily accessible. Separate sessions were held for Urdu-speaking South Asian participants, where a translator was present. If participants failed to attend one session, they received a telephone reminder. If they failed to attend two sessions, no further contact was made during the programme, but an 'intention to treat' analysis was carried out and outcome data collected where possible.

The theoretical models underpinning the X-PERT Programme are empowerment—'helping people discover and use their innate ability to gain mastery over their diabetes' [9]—and discovery learning—'the learner is a problem solver who uses tools and information to gain knowledge through discovery' [10].

Outcomes

Primary outcome

Glycated haemoglobin at 14 months.

Clinical outcomes

Venous blood samples were analysed at a central laboratory. Glycated haemoglobin (HbA_{1c}) was measured using a Diabetes Control and Complications Trial (DCCT) aligned method [11]. A full lipid profile was obtained. Blood pressure was measured, conforming to accepted methods [12] using a digital blood pressure monitor. Acceptable ranges for blood lipids and blood pressure were obtained from recent guidance reports [13].

Body weight was measured using calibrated electronic scales. A portable sonic machine was used to measure height. Body mass index (BMI) (kg/m^2) was calculated from height and weight measurements. The Tanita Body Fat Monitor analysed body fat to $\pm 0.5\%$ precision. The recommended technique for measuring waist circumference was used [14].

Medication prescribed for the treatment of diabetes was reviewed at 14 months and compared with that prescribed at baseline. A medication increase was defined as commencing on, or an increase in the dose of, oral glucose-lowering agents or insulin. A medication decrease was defined as a reduction in the type or quantity of oral agents or the number of units of insulin injected.

The X-PERT Program	
Topic	Description
Week 1: What is Diabetes?	Explore what happens to food when we eat it; self-monitoring of diabetes; diabetes treatments; feelings about living with diabetes. Dispel myths by using visual educational materials.
Week 2: Weight Management	Examine the 'balance of good health' model and use food models to distinguish between food containing protein, fat and carbohydrate. Inform about sensible eating whilst exploring barriers in doing so. Advise about the benefits of exercise and give practical examples including information about local exercise-on-prescription schemes.
Week 3: Carbohydrate Awareness	Perform a group task, developed to show the effect of quantity and quality of carbohydrate food on blood glucose levels. Use ping-pong ball models and laminated food pictures to dispel the myths surrounding glucose, sucrose and starch.
Week 4: Supermarket Tour	Address some common confusion surrounding dietary fat, sugar and food labelling. Encourage a diet that is enjoyable, variable and balanced whilst dispelling the concept of 'good' and 'bad' foods.
Week 5: Complications & Prevention	Discuss how to reduce the risk of developing longer-term complications through lifestyle changes, treatment and regular monitoring. Use visual educational aids to explore medical conditions in layman terms such as nephropathy, retinopathy, arteriosclerosis, neuropathy and blood pressure.
Week 6: Evaluation & Question time	Play "Living with diabetes", a board game to bring the X-PERT program to a close in a relaxed manner, reinforcing the main messages whilst encouraging participants to reflect on how much they have learnt.
Goal Setting: Last 20 minutes each week	The final 20–30 minutes <u>each</u> week involves the goal setting component of the empowerment model. Participants obtain and examine their health results, the implications of them and acceptable ranges. If participants make an informed decision to work on improving any of their health results, they work through the five step empowerment model. Psychosocial aspects of diabetes i.e. fitting diabetes into life rather than fitting life into living with diabetes. An important aspect of the empowerment model is to respect the decisions made by some of the participants not to goal-set.
Patient Manual	Resource manual given to participants at the beginning of the course. Background reading, health results and goal setting material added each week as appropriate.

Figure 1 Content of the X-PERT Programme.

Lifestyle

Validated questionnaires assessed: diabetes knowledge with 14 multiple choice questions [15]; nutritional intake from food frequency questions [16]; diabetes self-care activities (SDSCA) measuring frequency of physical activity, blood glucose testing and foot care [17].

Psychosocial

Validated questionnaires assessed: diabetes treatment satisfaction at baseline (scored 0–36), 'change in treatment satisfaction' at follow-up (scored -18 to +18) and perceived frequency of hypoglycaemia and hyperglycaemia (scored 0–6) [18]; quality

of life (ADDQoL) with three independently validated subscales relating to food and drink (range from -9 to +9) [19]; diabetes empowerment score (DES) with three validated subscales, managing the psychosocial aspects of diabetes, assessing dissatisfaction and readiness to change and setting and achieving diabetes goals [20].

Analysis

Sixty-four participants were required in each group to have 80% power to detect an absolute difference in HbA_{1c} levels of 1% between groups at the 5% significance level, assuming a SD of 2%. We recruited 314 participants (157 in each group) to allow for attrition.

Table 1 Demographic variables in the intervention and control group at baseline

Variable (mean)	Intervention group (sd)	Control group (sd)	Difference (95% CI)	P-value
Age (years)	61.3 (9.7) n = 157	61.8 (11.0) n = 157	0.5 (-1.8, 2.8)	0.64
Known duration of diabetes (years)	6.7 (6.4) n = 157	6.7 (6.7) n = 157	0.0 (-1.4, 1.5)	0.96
Age left full-time education (years)	15.3 (2.0) n = 122	16.2 (5.4) n = 112	0.9 (-0.5, 1.9)	0.10
Highest educational qualification (%)				
None	63 (34)	68 (37)		
‘O’-level	12 (7)	15 (8)		
‘A’-level	8 (4)	4 (2)		
Degree	6 (3)	7 (4)		0.13*
Employment				
Ever had a job (%)	121 (91)	114 (95)	4% (-3, 11)	0.23†
Job at present (%)	19 (16)	25 (24)	8% (-3, 18)	0.18†
Marital status				
Married (%)	92 (36)	75 (30)		
Divorced (%)	8 (3)	11 (4)		
Widowed (%)	24 (9)	26 (10)		
Single (%)	6 (2)	9 (4)		
Separated (%)	3 (1)	0 (0)		0.46*

* χ^2 test for trend.

†Fisher’s exact test.

The X-PERT programme and the individual appointments groups were compared by testing the group by time interaction term from a repeated measures analysis of variance with Greenhouse-Geisser correction for sphericity, taking HbA_{1c} as the primary outcome and interpreting others as hypothesis generating. Stata version 9 (Stata Corp, College Station, TX, USA) and SPSS for Windows version 11.0 (SPSS Inc., Chicago, IL, USA) were used. The CONSORT statement was adhered to where possible [21] and an intention to treat analysis was carried out as far as possible.

Results

Recruitment

Sixteen general medical practices consented to take part in the study. Letters of invitation were sent to 1544 adults with Type 2 diabetes. Notification was received for 13 people who had either died or moved out of the area. Positive replies were received from 336 (21.8%) people, of whom 314 (93.5%) provided written consent. The age, sex and ethnicity of non-responders were similar to those in the study. The mean age of the participants at diagnosis of diabetes (54 years) was the same as the mean age of participants newly diagnosed with Type 2 diabetes in the United Kingdom Prospective Diabetes Study [22].

There were no statistically significant differences between the intervention and control groups for either demographic or outcome variables, indicating that randomization had been effective (Table 1). Baseline assessments were carried out for all 314 participants. Details regarding participant flow and follow-up can be seen in Fig. 2.

The mean age of the participants at recruitment was 61.5 years (sd 10, range 30–85) and there were similar numbers of men, 162 (52%), and women 152 (48%). The median

duration of living with diabetes was 5 years (interquartile range 2–10). Eighty-three (26%) participants were treated with diet alone, 178 (57%) with tablets and 53 (17%) with insulin. Out of the 234 participants who responded to the question, 195 (83%) had left full-time education at the age of ≤ 16 years.

Biomedical outcomes (Table 2)

By 14 months, the X-PERT patients group compared with the control group had: greater reduction in HbA_{1c} (-0.6% vs. +0.1%, repeated measures ANOVA, $P < 0.001$); greater reduction in total cholesterol (-0.3 mmol/l vs. -0.2 mmol/l, $P = 0.01$); greater reduction in body weight (-0.5 kg vs. +1.1 kg, $P < 0.001$); reduced BMI (-0.2 kg/m² vs. +0.4 kg/m², $P < 0.001$); greater reduction in waist circumference (women -4 cm vs. -1 cm; men -2 cm vs. 0 cm; $P < 0.001$). There was no statistically significant difference between the groups with respect to systolic blood pressure, diastolic blood pressure, high-density lipoprotein (HDL)- and low-density lipoprotein (LDL)-cholesterol, total cholesterol to HDL ratio or triglycerides.

Diabetes medication

Twenty-four (16%) X-PERT patients reduced diabetes medication by 14 months compared with one (1%) control patient. Ninety-five (63%) X-PERT patients and 75 (53%) control patients remained on the same dose. Thirty-one (21%) X-PERT patients increased diabetes medication compared with 65 (46%) control patients. Therefore, for every seven patients who participated in the X-PERT Programme one patient could expect to have reduced their diabetes medication by

Table 2 Clinical outcomes: differences between the intervention (X-PERT Programme) group and the control (individual appointment) group

Outcomes	Baseline data (n = 157)			Four-month data			Fourteen-month data			Overall change Repeated measures ANOVA P-value
	Intervention group (sd) (n = 157)	Control group (sd) (n = 157)	Difference in means (95% CI)	Intervention group (sd) (n = 152)	Control group (sd) (n = 149)	Difference in means (95% CI)	Intervention group (sd) (n = 150)	Control group (sd) (n = 141)	Difference in means (95% CI)	
HbA _{1c} (%)	7.7 (1.6)	7.7 (1.6)	0.0 (-0.3, 0.4)	7.4 (1.3)	7.8 (1.6)	0.4 (0.1, 0.7)	7.1 (1.1)	7.8 (1.6)	0.7 (0.3, 1.0)	< 0.001
Systolic blood pressure (mmHg)	147.5 (19.8)	147.8 (23.7)	0.3 (-4.6, 5.1)	142.6 (18.8)	147.8 (22.7)	4.6 (-0.2, 9.3)	141.3 (16.8)	144.4 (23.5)	3.1 (-1.6, 7.9)	0.1
Diastolic blood pressure (mmHg)	82.6 (11.0)	82.2 (12.2)	-0.4 (-3.0, 2.2)	79.4 (9.5)	81.1 (12.3)	1.7 (-0.8, 4.2)	78.4 (9.6)	80.2 (10.9)	1.7 (-0.6, 4.1)	0.1
Total cholesterol (mmol/l)	5.1 (1.1)	4.9 (1.0)	-0.2 (-0.4, 0.1)	4.9 (1.0)	5.0 (1.0)	0.1 (-0.1, 0.4)	4.8 (1.1)	4.7 (1.0)	-0.1 (-0.3, 0.1)	0.01
HDL-cholesterol (mmol/l)	1.3 (0.3)	1.3 (0.4)	0.0 (-0.1, 0.1)	1.2 (0.3)	1.2 (0.4)	0.0 (0.0, 0.1)	1.1 (0.4)	1.1 (0.4)	0.0 (-0.1, 0.1)	0.3
LDL-cholesterol (mmol/l)	2.7 (0.9)	2.7 (0.8)	0.0 (-0.2, 0.2)	2.7 (0.9)	2.8 (0.8)	0.1 (-0.1, 0.3)	2.7 (0.9)	2.7 (0.8)	0.0 (-0.3, 0.1)	0.1
Total cholesterol:HDL ratio	4.3 (1.3)	4.2 (1.1)	-0.1 (-0.4, 0.2)	4.4 (1.3)	4.4 (1.3)	0.0 (-0.3, 0.3)	4.7 (1.3)	4.7 (1.4)	0.0 (-0.3, 0.3)	0.1
Triglycerides (mmol/l)* (95% CI)	2.2† (2.0–2.4)	2.0 (1.9–2.2)	0.9‡ (0.8, 1.0)	2.0 (1.8–2.2)	2.1 (1.9–2.3)	1.0 (0.9, 1.2)	1.8 (1.6–2.0)	1.8 (1.6–1.9)	1.0 (0.9, 1.1)	0.3
Body weight (kg)	83.2 (14.5)	82.8 (17.6)	-0.4 (-4.0, 3.2)	82.9 (14.9)	82.6 (17.9)	-0.3 (-4.1, 3.5)	82.7 (14.8)	83.9 (18.8)	1.2 (-2.7, 5.2)	< 0.001
Body mass index (kg/m ²)	30.8 (5.3)	30.6 (5.7)	-0.3 (-1.5, 1.0)	30.7 (5.4)	30.4 (5.8)	-0.4 (-1.7, 0.9)	30.6 (5.5)	31.0 (6.4)	0.4 (-1.0, 1.7)	< 0.001
Body fat (%)	35.2 (9.6)	34.1 (9.2)	-1.1 (-3.2, 1.1)	34.2 (9.4)	33.4 (9.0)	-0.8 (-2.9, 1.4)	33.6 (9.3)	33.4 (9.2)	-0.2 (-2.4, 1.9)	0.08
Waist size (cm)										< 0.001
Female	103 (12)	101 (18)	-3 (-8, 2)	101 (12)	99 (16)	-1 (-6, 3)	99 (12)	100 (16)	1 (-4, 6)	
Male	103 (11)	105 (11)	1 (-2, 5)	102 (11)	105 (11)	3 (0, 7)	101 (10)	105 (12)	4 (0, 7)	

Values are means (standard deviations) unless stated otherwise.

*Based on log-transformed outcome.

†Geometric means.

‡Ratio of means.

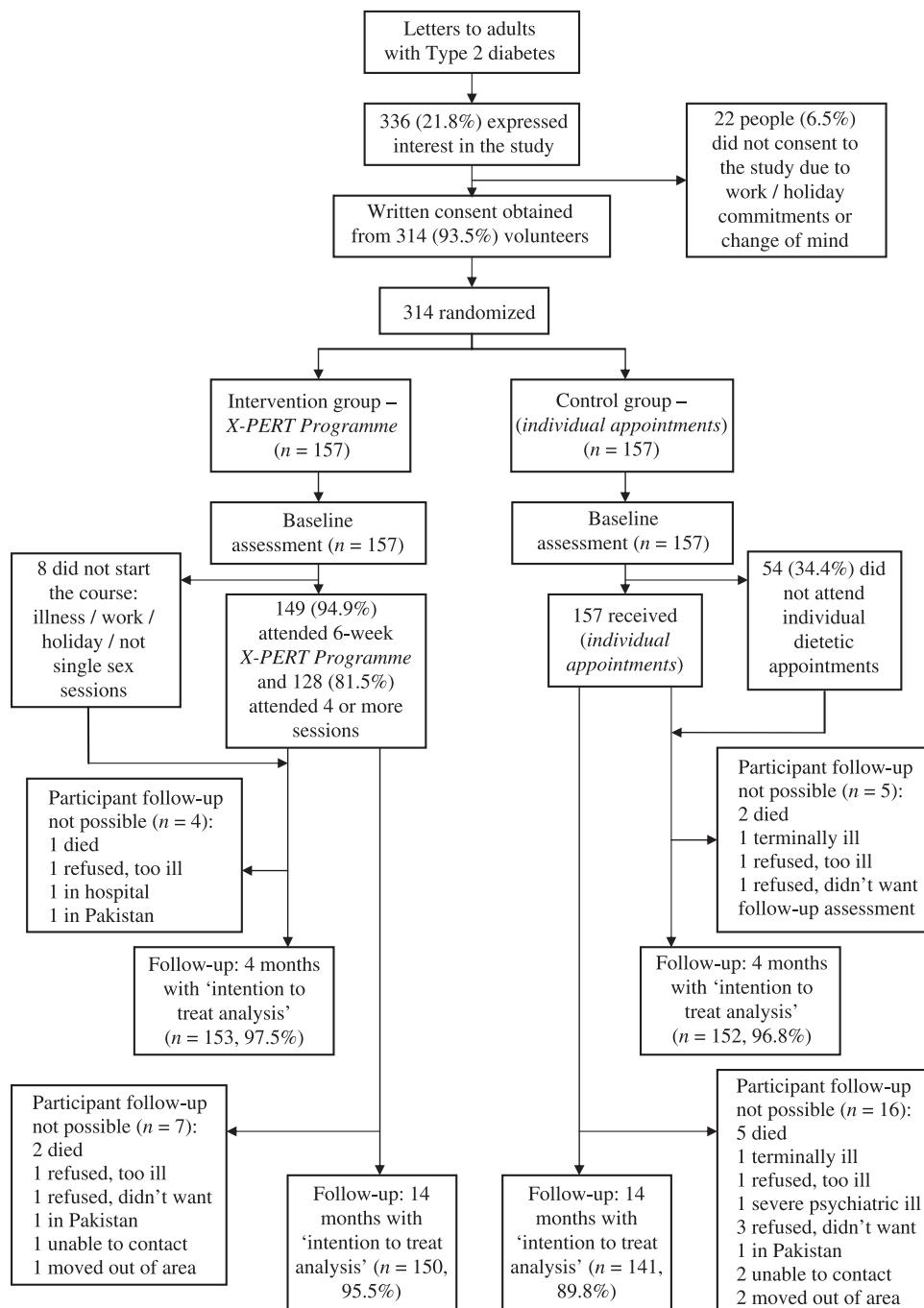


Figure 2 Flow of participants through the study.

14 months, number needed to treat (NNT) = seven patients [95% confidence interval (CI) 5, 11]. The χ^2 test for trend over the three ordered categories was statistically significant ($P < 0.0001$).

Validated questionnaires

Although the return rate of the full questionnaires at baseline, 4 months and 14 months was 83%, 67% and 61%,

respectively, the number of responses to each question were progressively lower (see number of responses in Tables 2 and 3).

Lifestyle outcomes (Table 3)

Diabetes knowledge scores improved more in the X-PERT patients than in those receiving individual appointments (+1.8 vs. +0.8, $P < 0.001$).

Table 3 Lifestyle outcomes: differences between the intervention (X-PERT Programme) group and the control (individual appointment) group

Outcomes	Baseline data			Four-month data			Fourteen-month data			Overall change Repeated measures ANOVA <i>P</i> -value
	Intervention group (sd) (n = 135)	Control group (sd) (n = 125)	Difference in means (95% CI)	Intervention group (sd) (n = 112)	Control group (sd) (n = 95)	Difference in means (95% CI)	Intervention group (sd) (n = 100)	Control group (sd) (n = 91)	Difference in means (95% CI)	
Diabetes knowledge score*	7.5 (3.5)	7.0 (3.1)	-0.5 (-1.3, 0.3)	10.4 (2.8)	7.8 (2.9)	-2.7 (-3.5, -1.9)	9.3 (3.1)	7.8 (2.7)	-1.5 (-2.3, -0.7)	<0.001
Self-care activity†										
Exercise	1.8 (2.3)	1.4 (2.5)	-0.4 (-1.0, 0.2)	2.8 (2.2)	1.9 (2.6)	-0.9 (-1.6, -0.3)	2.6 (2.4)	1.7 (2.7)	-0.9 (-1.6, -0.1)	NA‡
Foot care	2.4 (1.4)	2.3 (1.5)	-0.1 (-0.5, 0.3)	3.3 (1.2)	2.6 (1.5)	-0.7 (-1.1, -0.4)	2.8 (1.3)	2.2 (1.4)	-0.6 (-1.0, -0.2)	NA‡
Blood testing	1.7 (2.8)	1.5 (2.7)	-0.2 (-1.0, 0.5)	2.9 (2.4)	2.0 (2.7)	-0.9 (-1.6, -0.2)	2.6 (2.7)	2.0 (2.6)	-0.5 (-1.3, 0.3)	NA‡
Nutrient intake§										
Energy (kcal/day)	1473 (933)	1550 (1094)	76 (-185, 338)	1452 (824)	1565 (1028)	113 (-145, 371)	1724 (1811)	1687 (1589)	-37 (-525, 451)	0.5
Fruit and veg. (portions/day)	2.8 (1.8)	2.9 (2.2)	0.1 (-0.4, 0.7)	4.4 (2.6)	3.4 (2.8)	-1.0 (-1.8, -0.2)	5.2 (3.8)	3.1 (3.5)	-2.2 (-3.2, -1.1)	0.008
% Energy from carbohydrate	50.6 (11.7)	49.0 (11.9)	-1.6 (-4.7, 1.4)	54.0 (12.6)	49.9 (14.3)	-4.1 (-7.9, -0.4)	53.5 (13.2)	50.2 (11.2)	-3.3 (-6.9, 0.3)	0.8
% Energy from total sugars	17.4 (7.0)	17.4 (6.7)	0.1 (-1.7, 1.8)	23.1 (10.1)	18.0 (9.4)	-5.1 (-7.9, -2.4)	25.8 (13.4)	19.2 (8.0)	-6.6 (-9.9, -3.4)	0.02
% Energy from starch	33.5 (11.6)	31.8 (11.7)	-1.7 (-4.7, 1.3)	30.8 (12.2)	31.9 (16.0)	1.0 (-2.9, 5.0)	27.6 (10.5)	30.9 (11.6)	3.4 (0.15, 6.6)	0.3
% Energy from sucrose	6.5 (3.4)	6.5 (3.6)	0.0 (-0.9, 0.9)	9.2 (4.8)	7.0 (4.1)	-2.2 (-3.5, -0.9)	9.9 (6.1)	7.2 (3.7)	-2.7 (-4.2, -1.3)	0.01
% Energy from fat	28.7 (9.6)	29.5 (9.5)	0.8 (-1.7, 3.2)	26.4 (10.2)	28.8 (10.5)	2.4 (-0.5, 5.2)	26.6 (11.3)	29.3 (8.9)	2.7 (-0.3, 5.6)	0.5
% Energy from saturated fat	9.9 (3.9)	10.6 (4.5)	0.8 (-0.3, 1.8)	9.2 (4.1)	10.0 (4.3)	0.8 (-0.4, 2.0)	9.2 (4.3)	10.3 (3.6)	1.1 (0.0, 2.3)	0.4
Non-starch polysaccharides (g/day)	14.2 (9.8)	14.2 (10.1)	0 (-1.7, 3.22)	16.7 (7.5)	15.3 (11.9)	1.3 (-1.3, 4.1)	19.6 (13.2)	15.8 (13.2)	3.8 (0.03, 7.6)	0.9

Values are means (sd) unless stated otherwise.

*Multiple choice questions: scored from 0 to 14.

†Self-care activities: scored by a self-report measure of the frequency of completing different regimen activities over the preceding 7 days.

‡Repeated measures ANOVA not appropriate for ordered categorical outcomes.

§Nutritional intake calculated from food frequency questionnaire.

Table 4 Psychosocial outcomes: differences between the X-PERT Programme group and the control group

Outcomes	Baseline data			Four-month data			Fourteen-month data			Repeated measures ANOVA P-value
	Intervention group (sd) (n = 135)	Control group (sd) (n = 125)	Difference in means (95% CI)	Intervention group (sd) (n = 113)	Control group (sd) (n = 96)	Difference in means (95% CI)	Intervention group (sd) (n = 100)	Control group (sd) (n = 91)	Difference in means (95% CI)	
Diabetes treatment* satisfaction	24.5 (9.4)	23.3 (12.1)	-1.2 (-3.8, 1.5)	11.2 (5.8)	6.8 (6.9)	-4.4 (-6.1, -2.6)	9.5 (7.3)	5.8 (8.2)	-3.7 (-6.0, -1.5)	0.04
Frequency of hyperglycaemia	2.8 (1.9)	2.1 (1.8)	-0.7 (-1.2, -0.3)	0.4 (1.8)	0.3 (1.5)	-0.1 (-0.6, 0.3)	0.4 (1.9)	0.1 (1.3)	-0.3 (-0.7, 0.2)	0.02
Frequency of hypoglycaemia†	1.2 (1.7)	0.9 (1.5)	-0.3 (-0.7, 0.1)	-0.1 (1.6)	0.0 (1.3)	0.1 (-0.3, 0.5)	-0.2 (1.6)	0.0 (1.3)	0.2 (-0.3, 0.6)	0.6
ADDQoL‡										
'Freedom to eat as I choose'	-3.8 (3.0)	-3.6 (3.4)	0.2 (-0.7, 1.0)	-2.2 (2.5)	-3.9 (3.0)	-1.7 (-2.5, -0.8)	-2.5 (2.9)	-3.6 (2.9)	-1.1 (-2.1, -0.2)	0.1
'Enjoyment of food'	-3.3 (2.8)	-3.0 (3.3)	0.3 (-0.6, 1.1)	-1.9 (2.6)	-3.1 (3.5)	-1.2 (-2.1, -0.2)	-1.8 (2.9)	-2.8 (3.1)	-1.1 (-2.0, -0.1)	0.004
'Freedom to drink as I choose'	-2.9 (2.7)	-2.5 (2.7)	0.4 (-0.4, 1.2)	-1.5 (3.0)	-2.9 (3.3)	-1.5 (-2.5, -0.4)	-1.7 (2.8)	-3.2 (3.2)	-1.5 (-2.6, -0.5)	0.03
Average quality of life score (18 questions)	-2.2 (2.2)	-1.9 (2.2)	0.3 (-0.3, 0.8)	-1.5 (1.7)	-1.5 (1.7)	0.0 (-0.5, 0.5)	-1.4 (1.7)	-1.7 (2.1)	-0.3 (-0.8, 0.3)	0.2
Total Diabetes Empowerment Score§	2.9 (1.3)	2.8 (1.4)	-0.1 (-0.4, 0.2)	3.6 (1.1)	3.3 (1.1)	-0.3 (-0.6, 0)	3.5 (1.2)	3.2 (1.1)	-0.3 (-0.6, -0.04)	0.04
Three subscales:										
1. Psychosocial adjustment to diabetes	3.0 (1.3)	2.9 (1.4)	-0.1 (-0.4, 0.3)	3.7 (1.2)	3.4 (1.2)	-0.3 (-0.6, -0.1)	3.7 (1.3)	3.4 (1.2)	-0.3 (-0.7, -0.02)	0.03
2. Readiness to change	3.6 (0.6)	3.6 (0.5)	0.0 (-0.1, 0.2)	4.0 (0.5)	3.6 (0.5)	-0.4 (-0.5, -0.2)	3.9 (0.6)	3.6 (0.6)	-0.3 (-0.5, -0.1)	0.01
3. Setting and achieving goals	3.6 (0.6)	3.7 (0.7)	0.1 (-0.1, 0.2)	4.0 (0.5)	3.7 (0.6)	-0.3 (-0.5, -0.2)	4.0 (0.6)	3.8 (0.7)	-0.2 (-0.4, -0.05)	0.003

Values are means (sd) unless stated otherwise.

*Scored 0–36 (baseline), -18 to +18 (2 months postintervention); higher scores indicate greater diabetes treatment satisfaction.

†Scored 0–6 (baseline), -3 to +3 (2 months postintervention); higher scores indicate greater perceived frequency of hyperglycaemia/hypoglycaemia.

‡Scored from -9 (maximum negative impact on quality of life) to +9 (maximum positive impact on quality of life). Therefore a minus (-) score suggest that diabetes has a negative impact on quality of life and a plus (+) score, that diabetes has a positive effect on quality of life.

§Scored 0–5: higher scores indicate either greater self-empowerment for either total score and/or subscales.

At 4 months there was a significant difference in the number of days each week that the X-PERT patients were exercising (difference 0.9 day; 95% CI 0.3, 1.6), performing foot care self-management (difference 0.7 day; 95% CI 0.4, 1.1) and self-monitoring blood glucose levels (difference 0.9 day; 95% CI 0.2, 1.6) compared with those participants receiving individual appointments. The differences with respect to exercise and foot care remained significant at 14 months (difference 0.9 day, 95% CI 0.1, 1.6; difference 0.6 day, 95% CI 0.2, 1.0, respectively) but not with respect to self-monitoring of blood glucose levels (difference 0.5 day; 95% CI -0.3, 1.3).

The food frequency questionnaire indicated that the X-PERT patients had increased their daily consumption of fruit and vegetables more than control subjects (+2.4 portions vs. +0.2 portions, $P = 0.008$).

Psychosocial outcomes (Table 4)

X-PERT patients were 'much more satisfied' with their diabetes treatment compared with patients receiving individual appointments ($P = 0.04$), but also reported an increased frequency of hyperglycaemia ($P = 0.02$).

The X-PERT patients showed significant improvements, compared with control patients, in the freedom to drink ($P = 0.004$) and enjoyment of food ($P = 0.03$), but not overall quality of life ($P = 0.2$).

There were significant statistical differences between the X-PERT and control patients in total empowerment score ($P = 0.04$) and in subscales: psychosocial adjustment ($P = 0.03$), readiness to change ($P = 0.01$) and goal setting ($P = 0.003$).

Discussion

We tested the hypothesis that the X-PERT Programme led to increased diabetes self-management and sustained improvements in clinical, lifestyle and psychosocial outcomes. The study has not refuted this hypothesis. Participation in the X-PERT Programme led to improved glycaemic control; reduced requirement for diabetes medication; reduced body weight, BMI and waist circumference; lowering of total cholesterol levels; increased intake of fruit and vegetables; increased knowledge of diabetes; enjoyment of food and freedom to drink; self-empowerment, psychosocial adjustment to diabetes, readiness to change and setting and achieving goals; self-management skill through increased physical activity and foot care at 14 months.

Although X-PERT patients had increased self-monitoring of blood glucose levels at 4 months, frequency of self-monitoring blood glucose levels were not significantly different between groups at 14 months. This may suggest that, after initial experimentation, X-PERT patients became more confident with diabetes self-management, which resulted in reduced self-monitoring.

Glycated haemoglobin showed greater improvement at longer-term follow-up (primary outcome: 14 months) than the

short-term (4 months). That finding differed from previous research [7] and may be due to the theoretical models, empowerment and discovery learning. Instructing patients what to do can often lead to patients making changes to please the health professional, but because those changes may not be intuitive for that patient, they may not be continued in the long term. The sustained improvements in this study may be due to patients developing the skills, knowledge and confidence to identify and address their own problems regarding diabetes self-management.

Even though glycated haemoglobin at 14 months was the primary outcome, outcomes were also collected at 4 months, as it has previously been shown that benefits from self-management strategies can be lost between 1 and 3 months [7]. The 14-month outcomes were collected to ascertain whether any benefits were sustained in the longer term. Although there were no statistically significant differences between the two groups with respect to blood pressure, there were potentially clinically important reductions in the X-PERT patients.

People with Type 2 diabetes find it difficult to lose weight [23]. Although the X-PERT patients lost only 0.5 kg in body weight, the trend towards weight gain seen in the control group had been reversed.

Educational programmes are frequently described as complex interventions where it is often difficult to define the 'active ingredient(s)' [24]. The effectiveness of the X-PERT Programme may be due to the theoretical models used; skills and motivation of the educator (therapist effect); peer support and group work; visual aids; shared health records; goal setting or other specific components of the education programme. The precise mechanism of action is likely to be a combination of all components. Therefore, an attempt has been made to develop the programme in a manner that enables it to be transported to, and put into operation in, other contexts. It is possible that the intervention was effective solely due to the 12 h of contact time. However, it has previously been shown that when patients receive the same structured diabetes education delivered over the same time period, on either a one-to-one or group basis, the group intervention is more effective [25]. Even if the success of the intervention was due, in part, to the length of contact time, it would be a cost-effective and realistic strategy compared with delivering 12 h of structured education to patients on an individual basis.

The X-PERT Programme was not delivered at each general practice but, instead, at local community venues, giving little opportunity for contamination between the intervention and control group. In addition, there was no evidence of any clustering within tutors (intraclass correlation = 0) for primary outcomes.

Empowerment cannot be given or taught, it is a process that people do for themselves [26]. The root of empowerment is to recognize that every person is an autonomous being. The influence of professionals is to enable the person to have knowledge and confidence to make informed choices about their actions

and activities [27]. It has been suggested that no published empirical study has tested the empowerment model in its entirety [28]. This study addressed the five components of empowerment. Participants with diabetes were valued and accepted as being experts at living with their condition. Participants were encouraged to participate actively in the learning process and to discuss their feelings towards living with their condition and the effect it has on their day-to-day lives. They were encouraged to have autonomy by working in alliance with professionals to identify successful strategies for diabetes self-management.

Although depression is common in those with diabetes [29] and several participants were prescribed antidepressants, depression scores were not measured in the trial. This could be seen as a possible limitation of the study, but many outcomes were necessary and, as the programme specifically aimed to increase self-empowerment, a decision was made to measure empowerment score in preference to depression score.

The X-PERT project was well received from the start with excellent attendance rates [30]. The mean glycated haemoglobin at baseline was 7.7%. This differs from many other diabetes education interventions that recruit only participants with poor diabetes control and are therefore more likely to experience a positive outcome [31]. The study was also better powered in comparison with other education studies [32]. The response rate of questionnaires was excellent at baseline and, although the response rate declined over time, it was still considered good for a clinical trial [33].

The X-PERT Programme is likely to be generalizable to the majority of people with Type 2 diabetes because: the X-PERT trial was a pragmatic trial with minimum exclusion criteria; it recruited people with Type 2 diabetes from both caucasian and South Asian backgrounds; it was delivered under normal conditions within primary care. A possible criticism may be that more motivated patients volunteered to participate. That could be said for all clinical trials but the control participants would also be motivated and therefore one would still be comparing similar groups.

Key criteria that a structured education programme should meet to fulfil the NICE requirements have been developed by a working party of users and providers sponsored jointly by Diabetes UK and the Department of Health [34]. An X-PERT pack has now been developed to meet those criteria and includes a written curriculum, visual aids, 'train the trainers' course, evaluation scheme and quality assurance programme. The X-PERT Programme is now being rolled out to benefit more people with Type 2 diabetes.

Competing interests

Following the RCT, Burnley, Pendle & Rossendale PCT now have a financial interest in delivery of the X-PERT train the trainers course and from the sale of the X-PERT educational resources. However, all monies received either employ X-PERT team staff or finance the production of the educational resources.

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X-PERT structured education programmes improve control in diabetes

Trudi Deakin

Article points

1. NHS reforms call for improvements in the quality of service provision within constrained finance.
2. Better diagnosis and management of diabetes would reduce diabetes-related complications and the economic burden diabetes places on the healthcare budget.
3. X-PERT Health's structured education programmes are well attended and have been shown to improve clinical, lifestyle and psychosocial outcomes in individuals with newly diagnosed and existing diabetes.

Key words

- Diabetes
- Improved self-care
- Structured education
- X-PERT programmes

Trudi Deakin is Chief Executive and Consultant Research Dietitian, X-PERT Health, Hebden Bridge, West Yorkshire.

The increasing prevalence of diabetes and the management of diabetes-related conditions place a strain on the healthcare budget at a time of financial stringency. Better self-management would improve glycaemic control as well as reducing the risk of complications.

X-PERT Health's structured education programmes have been shown to improve clinical, lifestyle and psychosocial outcomes in people with newly diagnosed and existing diabetes. Additionally, they offer a cost-effective strategy in the treatment and management of this condition. Each programme consists of six weekly sessions lasting 2.5 hours that cover an extensive range of topics to improve knowledge and diabetes self-care. An audit was performed in January 2012 on data from 23 610 participants in X-PERT programmes. Results showed that participants were satisfied and empowered by the programmes, with improvements in HbA_{1c}, weight, body mass index, systolic and diastolic blood pressure, total, HDL and LDL cholesterol and triglycerides, as well as a reduction in diabetes medication.

The NHS reforms endorse the strapline "no decision about me, without me" and call for quality, innovation, productivity and prevention (Department of Health [DH], 2010). These reforms are an opportunity for healthcare organisations to improve the quality of services they deliver and, in doing so, improve the health and well-being of the nation. NHS efficiency savings have been proposed, aiming for a £15–20 billion saving between 2011 and 2014, and it is anticipated that these savings can only be achieved through quality improvements and advances in innovation (Nicholson, 2009).

The estimated prevalence of diabetes (diagnosed and undiagnosed) in people aged 16 and over in England is 7.4% (Association of Public Health Observatories, 2010). The prevalence of diabetes has now reached 3.75 million in the UK, with 2.9 million people being aware that they have the condition (Diabetes UK, 2012), adding to stress on the healthcare budget at a time of financial stringency.

Diabetes is a costly condition, taking up 10% of the NHS budget, and a significant part of this cost is attributable to inpatient care and treating diabetes-related conditions

(DH, 2012). Intensifying glycaemic control has been shown to reduce the onset of diabetes-related complications, but there is emerging evidence that achieving target blood glucose levels through prescribed diabetes medication may cause unwanted side effects or complications (Skyler et al, 2009). Although prescription costs for type 2 diabetes have increased by 89% between 1997 and 2007, glycaemic control (HbA_{1c}) has only improved by 0.1 percentage points, from 8.8% (73 mmol/mol) to 8.7% (72 mmol/mol; Currie et al, 2010).

The clinical and cost-effectiveness of structured education to improve diabetes self-management has been established (Norris et al, 2001; Deakin et al, 2005; Jacobs-van Der Bruggen et al, 2009). NICE (2008a) guidance states that all people at risk of, and diagnosed with, diabetes should have an opportunity to attend a structured patient education programme with annual follow-up. Up to 90% of people will access structured education if offered as an integral part of diabetes treatment and management (NICE, 2008b). The NICE quality standard defines personalised advice on nutrition and physical activity and structured education as specific quality statements (NICE, 2011). In England, 85% of primary care trusts (PCTs) report that they have contracts to provide structured education for people with newly diagnosed type 2 diabetes, and 76% report that these programmes are NICE compliant; however, only 66% of PCTs review whether all people newly diagnosed are offered structured education, and 48% of specialist providers report that they do not have the capacity to meet demand (Innove, 2012).

X-PERT Health's structured education programmes have been shown to improve clinical, lifestyle and psychosocial outcomes in people with newly diagnosed and existing diabetes (Deakin et al, 2006). Additionally, they have been demonstrated to be a cost-effective strategy in the treatment and management of diabetes (Deakin, 2011a), costing as little as £15 per participant (Deakin, 2011b). The X-PERT Prevention of Diabetes

(X-POD) programme was launched at the *Diabetes UK Annual Professional Conference* in March 2012 to meet the needs of those at risk of developing the condition.

What is X-PERT education?

X-PERT structured education programmes are delivered over 6 weeks by healthcare professionals who have trained as educators. The programmes are designed to increase participants' knowledge, skills and confidence to make informed decisions and self-manage their condition.

The X-PERT philosophy is supported by: discovery learning (Bruner, 1961); problem-based learning (Barrows, 1996); facilitative learning (Rogers, 1959); experiential learning (Kolb, 1984); the principles of adult learning (Brookfield, 2001); group education (Deakin et al, 2005); the patient-centred approach (Lacroix and Assal, 2003); and the empowerment model (Anderson and Funnell, 2000).

The X-PERT programmes include X-PERT Diabetes, X-PERT Insulin and X-POD. These structured education programmes deliver a range of topics to help people understand:

- Health and disease.
- Tablets and insulin.
- Food, nutrients and digestion.
- What health results mean.
- The benefit of physical activity.
- Weight management.
- The impact of blood glucose, blood pressure and blood cholesterol levels on long-term health.
- Self-management of diabetes.
- Special considerations regarding travel, insurance, driving and work.

Each programme consists of six weekly sessions lasting 2.5 hours; *Table 1* outlines an overview of X-PERT Health's structured education programmes.

The X-PERT programmes have been shown in a randomised controlled trial to improve clinical, lifestyle and psychosocial outcomes in white Caucasian and South Asian people with newly diagnosed and existing diabetes (Deakin et al, 2006). They have also been

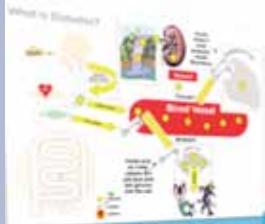
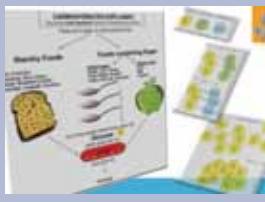
Page points

1. The clinical and cost-effectiveness of structured education to improve diabetes self-management has been established; NICE (2008a) guidance states that all people at risk of, and diagnosed with, diabetes should have an opportunity to attend a structured patient education programme with annual follow-up.

2. X-PERT Health's structured education programmes have been shown to improve clinical, lifestyle and psychosocial outcomes in people with newly diagnosed and existing diabetes.

3. X-PERT structured education programmes are delivered over 6 weeks by healthcare professionals who have trained as educators. The programmes are designed to increase participants' knowledge, skills and confidence to make informed decisions and self-manage their condition.

Table 1. Overview of X-PERT Health's structured education programmes.

X-POD	X-PERT Diabetes	X-PERT Insulin
	Week 1: what is impaired glucose regulation, diabetes and blood glucose control? Care planning: lifestyle experiment to address individual health profiles.	Week 1: what is diabetes, digestion and blood glucose control? Care planning: lifestyle experiment to address the diabetes health profile.
	Week 2: weight management. Energy balance, eating for health and physical activity. Care planning: lifestyle experiment to explore diet and physical activity levels.	Week 2: weight management. Energy balance, eating for health and physical activity. Care planning: lifestyle experiment to explore diet.
	Week 3: carbohydrate and fat awareness. The quantity (amount) and quality (type) of carbohydrate and fat in foods. Care planning: activity to explore individual carbohydrate and fat intake.	Week 3: carbohydrate awareness. The quantity (amount) and quality (type) of carbohydrate foods. Care planning: activity to explore carbohydrates.
	Week 4: reading and understanding food labels. Traffic light system, guideline daily amounts (GDAs), nutritional claims. Care planning: activity to explore personal shopping lists.	Week 4: reading and understanding food labels. Traffic light system, GDAs, nutritional claims. Care planning: activity to explore.
	Week 5: my health check. Healthy life for healthy results. Exploring body weight, waist size, blood glucose, blood pressure and blood cholesterol. Care planning: personal plan for health.	Week 5: possible complications. Hypo-/hyperglycaemia. Possible complications of diabetes and prevention. Care planning: lifestyle experiment to keep healthy.
	Week 6: are you a diabetes prevention X-PERT? X-POD game – re-cap and assess learning and health profile. Care planning to take charge and reduce the risk of developing diabetes.	Week 6: are you an X-PERT? X-PERT game – re-cap and assess learning and diabetes health profile. Care planning to take charge and self-manage diabetes.
		Week 6: are you an Insulin X-PERT? Game: "MATCH-IT 24/7" to challenge real "living with diabetes on insulin" situations. Have the self-management challenges been addressed?

demonstrated to be a cost-effective strategy in the treatment and management of diabetes; it costs as little as £15 per participant and has the potential to reduce the NHS prescription bill by £367 million per year (Deakin, 2011a).

Structured education audit

Audit standards have been identified from the published randomised controlled trial and national targets (Deakin et al, 2006; NICE, 2008a). The following outcomes are recorded at baseline, 6 months and annually thereafter and entered onto the audit database: attendance, HbA_{1c} (mmol/mol), body weight (kg), body mass index (kg/m²), waist circumference (cm), blood pressure (systolic and diastolic; mmHg), lipid profile (total, LDL, HDL and triglyceride cholesterol; mmol/L) and prescribed diabetes medication. A medication increase is defined as commencing on, or an increase in oral hypoglycaemic agents (OHAs) or insulin; a

medication decrease is defined as a reduction in the type or quantity of OHAs or the number of units of insulin injected. The audit report presents the number of participants for each outcome and the mean value at each time point.

Educators also enter how many of the sessions were attended. The audit report demonstrates that 95% of participants attended at least one session, and 81% attended four or more sessions. Participant satisfaction is recorded by participants completing an evaluation questionnaire that scores the structured education programme for enjoyment, usefulness, degree of self-management obtained and impact on living with diabetes. The mean satisfaction score for each programme is calculated from the total questionnaire scores and entered onto the database; the mean participant satisfaction score was 95%.

Participant empowerment is assessed at baseline, 6 weeks and annually thereafter by participants completing a validated questionnaire (Anderson et al, 2003). The mean empowerment score is calculated for the group from individual questionnaires and is entered onto the audit database. The audit report provides the mean score for each time point and the percentage change from baseline, which is currently an increase in empowerment of 23% post-education and 26% at 1 year.

There are 57 licensed X-PERT organisations or clusters of organisations, and 40 (70%) have entered audit data. In order to ensure that the national implementation of the X-PERT programme continues to be clinically and cost-effective, continuous audit is conducted. Audit reports can be generated for any time period per programme, per educator, per organisation or for all participants and present the number of participants (*n*) and the mean values for each outcome. A recent audit of 23 610 people with diabetes further validates the X-PERT approach by demonstrating excellent attendance rates and highly significant results in line with the clinical trial results at 6 months and 1 and 2 years. *Table 2* presents the audit results for all centres.

Table 2. Audit results for X-PERT Diabetes and X-PERT Insulin.

Outcomes	Baseline (mean; <i>n</i> =20 804)	6 months (mean; <i>n</i> =4764)	1 year (mean; <i>n</i> =3409)	2 years (mean; <i>n</i> =435)
HbA _{1c} (mmol/mol)	60.8	54.6	54.0	53.0
Body weight (kg)	89.4	87.1	86.3	86.7
Body mass index (kg/m ²)	31.9	31.0	30.9	30.7
Waist circumference (cm)	103.4	101.8	101.0	101.1
Systolic blood pressure (mmHg)	134.1	133.1	132.9	132.5
Diastolic blood pressure (mmHg)	77.5	76.3	75.2	75.5
Total cholesterol (mmol/L)	4.5	4.2	4.2	4.1
HDL cholesterol (mmol/L)	1.2	1.3	1.3	1.3
LDL cholesterol (mmol/L)	2.5	2.3	2.3	2.1
Triglycerides (mmol/L)	1.9	1.7	1.7	1.7
Reduced diabetes medication from baseline (%)	0	27	47	38

Conclusion

Type 2 diabetes is considered a progressive disease characterised as a triad of insulin resistance, beta-cell dysfunction and impaired hepatic glucose production (Ramlo-Halsted and Edelman, 2000). The benefits of improved glycaemic control in reducing the onset of secondary diabetes complications has been established (Stratton et al, 2000), and it has previously been accepted that people will require increased prescribed diabetes medication over time to obtain target glycaemic control (UK Prospective Diabetes Study [UKPDS] Group, 1998). However, X-PERT Health suggests that the same results can be achieved through lifestyle and self-management; X-PERT Health's structured education programmes lead to health improvements and a reduced requirement for diabetes medication, which significantly improves individuals' quality of life and reduces the cost to the NHS. It has always been assumed that diabetes is a progressive condition (UKPDS Group, 1998), but there is now emerging evidence that this assumption is not true; if individuals make significant lifestyle changes, they can indeed halt and even reverse the progression of the condition (Pastors et al, 2002; Coppell et al, 2010; Andrews et al, 2011; Deakin et al, 2011a; Lim et al 2011). ■

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Structured Education for Type 2 diabetes

A toolkit for optimal delivery



[Enter the toolkit >](#)

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Foreword

The Health Innovation Network (HIN) is a membership organisation, driving lasting improvements in patient and population health outcomes by spreading the adoption of innovation into practice across the health system.

As the Academic Health Science Network for South London our work prioritises health challenges for local communities across a number of clinical areas; including diabetes, dementia, MSK, cancer and alcohol. Our work incorporates cross-cutting innovation themes to generate wealth and increase the quality of care in our communities.

We are proud to be collaborating with our partner and member organisations to align; education, clinical research, informatics, innovation, training and education in healthcare. We support knowledge exchange networks to ensure the patient is at the heart of healthcare delivery and to support early adoption of healthcare innovations.

Introduction

Dr Charles Gostling, Clinical Director (Diabetes), Health Innovation Network South London and GP, Lewisham



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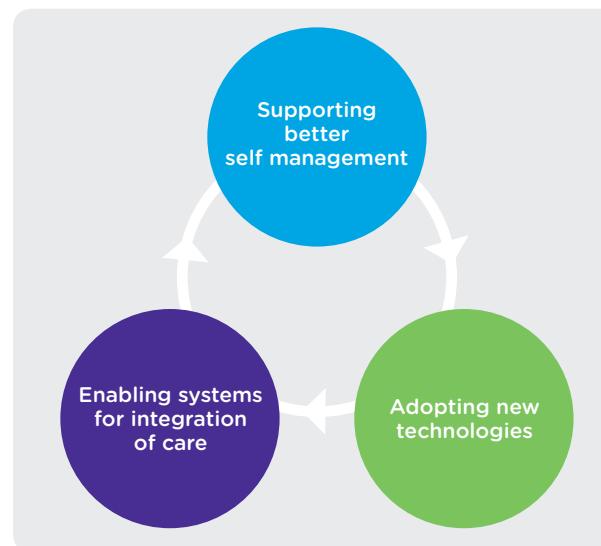
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- 4 What the person with diabetes thinks
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Information sources (references/footnotes) have been included on the base of each page. You can view a complete list of references [here](#).

Our approach to Diabetes

Our team have used Joint Strategic Needs Assessments to identify key areas of variation and risk. We have developed and refined, in consultation with a range of stakeholders, our high level priorities below.



Projects 2014-15

- 1 Improving self-management of insulin therapy by improving access to and appropriate use of technologies.
- 2 Improving the integration of care pathways for management of unscheduled care in hypoglycaemia and hyperglycaemia.
- 3 Right Insulin, Right Time, Right Dose.
- 4 Structured education and related support for self-management.

Guide to symbols



Important information



Downloads



What people are saying



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The toolkit was informed by a representative group of service users, commissioners and providers who have contributed a number of resources and have generously shared their experiences and expertise with the Health Innovation Network.



Why a toolkit?

Structured education is an effective self-management tool to help people diagnosed with Type 2 diabetes understand and manage their life long condition. Yet uptake is shockingly low despite recommendations in [NICE guidance](#)¹ and the introduction of a [QOF indicator](#)² for referral to structured education programmes.

This toolkit will address the causes of low uptake and provide simple guidance on how to ensure high quality structured education is easily accessible.

Who is the toolkit for?

- Commissioners of structured education programmes.
- Providers.
- Referrers into structured education.
- People with diabetes, their families or carers.



This toolkit makes commissioning high quality and accessible structured education programmes easier. Much of the hard work has already been done through sharing best practice, providing meaningful metrics to benchmark performance and giving you key performance indicators. It can be amended according to local needs with a menu of options allowing you to assess the range of structured education available and provide programmes to suit the 'harder to reach' individuals within your CCG.

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)

² NHS England, BMA & NHS Employers (March 2014). 2014/15 General Medical Services (GMS) contract Quality and Outcomes Framework (QoF). NHS England Gateway Reference: 01264G2atway reference: 01264



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Using the toolkit

What is diabetes structured education?

Diabetes courses provide information on how to manage diabetes through diet, physical activity and medication. They are run by health professionals – usually a diabetes specialist nurse or dietitian often in a group setting.

Find out more about the two most common programmes nationally:

Diabetes Education for Self-Management for Ongoing and Newly Diagnosed (DESMOND)



Anita

The X-PERT Diabetes Programme for people with Type 2 diabetes



Dr Trudi Deakin



Links to useful and relevant resources can be found within the toolkit or via the [Health Innovation Network's website](#). These include exemplar service specifications, health professional and patient resources, score cards, links to useful YouTube clips and case studies.

The fundamentals

- Structured education programmes for people with Type 2 diabetes are an effective and cost efficient way of improving outcomes and are a key part of diabetes self-management when linked with collaborative care planning, screening and medications^{3,4}.
- Acting early to prevent complications limits their impact on the person's life and saves the NHS money⁴.
- However access to structured education is very poor and there is unacceptable variation across South London⁵.
- When people with diabetes, service providers, referrers and commissioners work collaboratively real change can happen allowing education to reach a greater number of the population, as has been demonstrated in Bexley, Southwark and Lambeth^{6,7}.
- NICE states that structured education should be offered to every person with diabetes and/or their carer around the time of diagnosis, with annual reinforcement and opportunity to be repeated as necessary⁸.
- It is vital to record and report those who are not attending the structured education offered (usually DESMOND or X-PERT) and provide a suitable alternative that meets their individual needs³.
- High quality alternative education programmes do exist for harder to reach groups and innovative ways should be sought to allow people with diabetes to access different types of learning. [See the menu of options](#).



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Diabetes

The national picture

£10bn per year

Diabetes costs the NHS £10 billion per year, accounting for 10% of the NHS budget⁹.

£16.9bn by 2035

Public health forecasting predicts that an aging population and rising prevalence of obesity will increase NHS spending on diabetes to £16.9 billion by 2035, accounting for 17% of the NHS budget. It is a leading cause of blindness in the UK¹⁰ and over 100 amputations are carried out each week in people with diabetes due to complications - 80% of which are preventable.

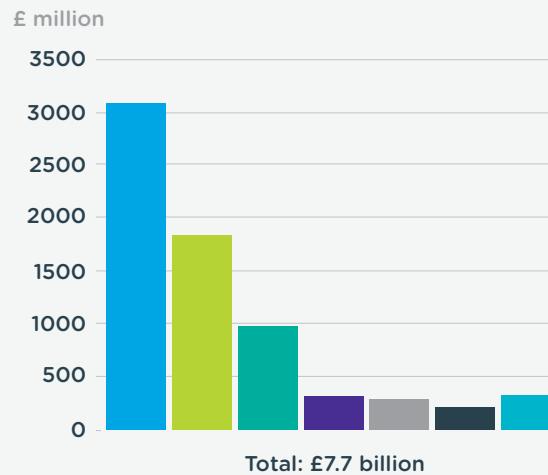
22,000 deaths

Each year 22,000 people with diabetes die prematurely⁵.

Biggest risk groups

Type 2 diabetes is more common in people of black and south Asian origin, and tends to present at a younger age in these ethnic groups.

The costs of complications of diabetes⁹



- Myocardial infarction, ischaemic heart disease, heart failure and other CVD
- Excess inpatient days
- Kidney failure, other renal (kidney-related) costs
- Neuropathy
- Stroke
- Foot ulcers and amputations
- Other: dyslipidemia, erectile dysfunction, ketoacidosis, depression, gestational diabetes, diabetic medicine outpatients, hypoglycaemia, hyperglycaemia and retinopathy

⁵ HSCIC. Health and Social Care Information Centre. National Diabetes Audit 2010-2011. Report into the data quality of Diabetes Structured Education. 2012 [Download](#)

⁹ Hex. N., Barlett. C., Wright. D., Taylor. M. and Varley. D. Estimating the current and future costs of Type 1 and Type 2 diabetes in the UK, including direct health costs and indirect societal and productivity costs. Diabetic Medicine 2012. DOI: 10.1111/j.1464-5491.2012.03698.x

¹⁰ NHS England (2014). Action for Diabetes. [Download](#)



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The main health and economic cost of diabetes is that of complications. Improving glycaemic control through self-management will ultimately reduce the costs. Increasing attendance at structured education for Type 2 diabetes could save each CCG £1.7 million per year^{*16}. 50% of people show signs of complications at diagnosis. This makes it all the more necessary for people with diabetes to understand what they can do to positively affect their own health and self-manage their diabetes¹¹.”



The picture in London

Data suggests a 75 per cent increase¹² in the incidence and prevalence of Type 2 diabetes in London over the last decade. The rising prevalence of diabetes is believed to be due to an ageing population and unhealthy lifestyles leading to obesity.



The picture in South London

The diabetes prevalence model for local authorities shows that in 2014 there were 174,627 people with diabetes over the age of 16 in South London and this is expected to rise to 249,848 by 2030¹².

Further information

For more information on diabetes prevalence modelling for your borough please use the tool provided by Public Health England. [You can download it here.](#)



* Figure based upon cost savings of £367 million per year across the NHS with X-pert, divided by 221 CCGs in England.

¹¹ NHS England CCG Map. [Download](#) (accessed 9th September 2014).

¹² Health Committee, London Assembly (April 2014). Blood Sugar Rush; Diabetes time bomb in London. [Download](#)

¹⁶ Deakin T. The Diabetes Pandemic: Is structured education the solution or an unnecessary expense? Practical Diabetes 2011; 28; 1-14



Introduction to structured education programmes



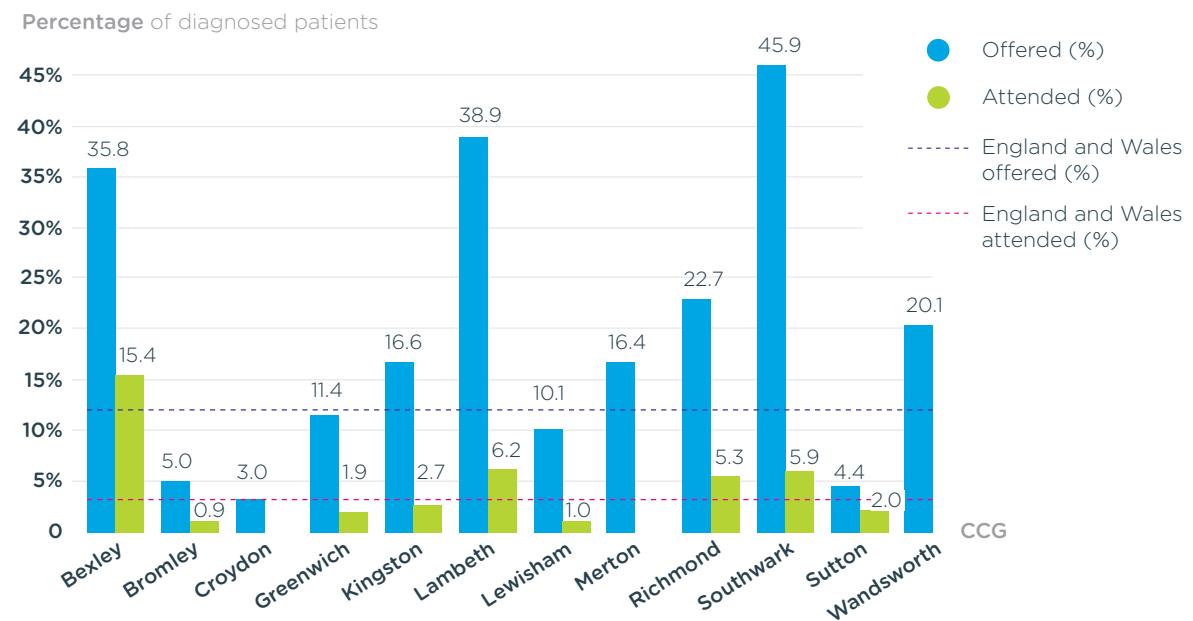
NICE⁸ recommends that well-designed and well-implemented structured education programmes are likely to be cost-effective for people with diabetes and should be offered to every person and/or their carer at and around the time of diagnosis, with annual reinforcement and review.

Structured education programmes for people with Type 2 diabetes are an essential component of effective diabetes management. Most people will spend only 1.5 hours with a health care professional per year, the rest of the time they are required to make daily lifestyle decisions that may have a significant impact on their health and overall quality of life¹³.

The aim of structured education is for people with diabetes to improve their knowledge, skills and confidence, enabling them to take increasing control of their own condition and integrate effective self-management into their daily lives. High-quality structured education can have a profound effect on health outcomes and can significantly improve quality of life.

National Diabetes audit data shows that as few as 12% of people with Type 2 diabetes are offered structured education with only 2% taking up the offer⁵. This poor provision has been recognised, and referral to a structured education programme was made a **Quality and Outcomes Indicator incentive in 2013/4**. Despite this, preliminary work in South London suggests that not all providers collect data regarding uptake at structured education programmes. In boroughs where increasing uptake has been targeted, for example in Lambeth & Southwark, uptake is now in excess of 40% of those referred¹⁴.

SE offered and attended rates across South London according to the National Diabetes Audit (NDA) data



⁵ HSCIC, Health and Social Care Information Centre. National Diabetes Audit 2010-2011. Report into the delivery of Diabetes Structured Education. 2012 [Download](#)

⁸ NICE, Quality Standard 6 (2011) Diabetes in Adults Quality Standard. [Download](#)

¹³ Steinsbekk, A., Rygg, L., Lisulo, M., Rise, M. and Fretheim, A., (2012). Group based diabetes self-management education compared to routine treatment for people with type 2 diabetes mellitus. A systematic review with meta-analysis. BMC Health Services Research, 12, 213. [Website](#)

¹⁴ National Diabetes Audit (November 2013). Are diabetes services in England and Wales measuring up? A summary of findings from the National Diabetes Audit 2011-12 for people with diabetes and anyone interested in the quality of diabetes care. [Download](#)



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Education can be flexible

The current NICE guideline⁸ does not specify the exact format, intensity, or the setting for diabetes education.

Different models exist

There are a number of structured education models. The most commonly provided programmes are: Diabetes Education for Ongoing and Newly Diagnosed (DESMOND), X-PERT, and the Diabetes Manual.

Clinically effective

Group based structured education programmes are clinically effective. Meta-analysis of 21 studies showed significant reductions in HbA1c at 6, 12 months and 2 years as well as significant improvements in knowledge, self-management skills and empowerment¹³.

Cost effective

The cost of providing structured education courses is in the region of £65-£250 per patient and given the scale of implementation with approximately 80 commissioning groups running the DESMOND programme and a similar number running the X-PERT programme across the UK the cost to the NHS is considerable^{15,16}.

Uptake of these programmes has been alarmingly low at around 2%¹⁴.

Not attending a course is wasteful, not only in terms of finance, but also a lost opportunity for people with diabetes.

To meet the requirement of the QOF, structured education has to be delivered to a minimum standard and meet key criteria. These were defined in the report from the Patient Education Working Group³ – programmes should:

- Have a structured written curriculum
- Have trained educators
- Be quality assured
- Be audited.

The evidence

- NICE guidance recommends programmes to give people **knowledge and motivation** to manage their condition⁸.
- Education of people with Type 2 diabetes is also **cost effective**. Data from X-PERT shows the programme costs are outweighed by savings made from the reduced need for cardiovascular and diabetes medication¹⁶. DESMOND also produces cost savings through reductions in weight and smoking rate¹⁵.
- There are a number of other types of structured education programmes for people with Type 2 diabetes which have undergone or are undergoing clinical trials and user evaluation. A full list of these programmes can be found in our [menu of Type 2 education providers](#).

³ Department of Health & Diabetes UK (2005). Structured Patient Education in Diabetes. Report from the patient education working group. [Download](#)

⁸ NICE, Quality Standard 6 (2011) Diabetes in Adults Quality Standard. [Download](#)

¹³ Steinsbekk, A., Rygg, L., Lisulo, M., Rise, M. and Fretheim, A., (2012). Group based diabetes self-management education compared to routine treatment for people with type 2 diabetes mellitus. A systematic review with meta-analysis. *BMC Health Services Research*, 12; 213. [Website](#)

¹⁴ National Diabetes Audit (November 2013), Are diabetes services in England and Wales measuring up? A summary of findings from the National Diabetes Audit 2011-12 for people with diabetes and anyone interested in the quality of diabetes care. [Download](#)

¹⁵ Gillett, M., Dallocchio, H.M., Dixon, S., Brennan, A., Carey, M.E., Campbell, M.J., et al. Delivering the diabetes education and self management for ongoing and newly diagnosed (DESMOND) programme for people with newly diagnosed type 2 diabetes: cost effectiveness analysis. *BMJ* 2010; 341:c4093

¹⁶ Deakin T. The Diabetes Pandemic: Is structured education the solution or an unnecessary expense? *Practical Diabetes* 2011; 28; 1-14



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Best practice case studies

Projects in South London boroughs have shown that uptake of existing structured education programmes can be improved through a variety of interventions, including better marketing and organisation.

Bexley

In Bexley attendance at the X-PERT structured education course improved from only 40 people in 2009 to over 1000 people in 2010⁴. This was achieved through a variety of methods:

- Consulting with people with diabetes to identify venues and timings for courses
- Using lay-educators as it was realised that people are not always inclined to listen to healthcare professionals
- Ensuring robust administration of the referral and booking process, including electronic referral systems.



View video:

John Grumitt, MD Metapath Solutions
(Vice President, Diabetes UK, NHS England Commissioning Board, Diabetes CRG).
Email: John@grumitt.co.uk

Lambeth and Southwark

The Diabetes Modernisation Initiative in Lambeth and Southwark sought to increase numbers of people attending structured education programmes, in this instance DESMOND. In particular increasing the proportion of people booked onto a course that actually attended.

From the year 2011-12 to 2012-13 the booked to attend ratio in Southwark increased from 74% to 90%. Strategies for increasing uptake had included awareness training for primary healthcare practitioners.



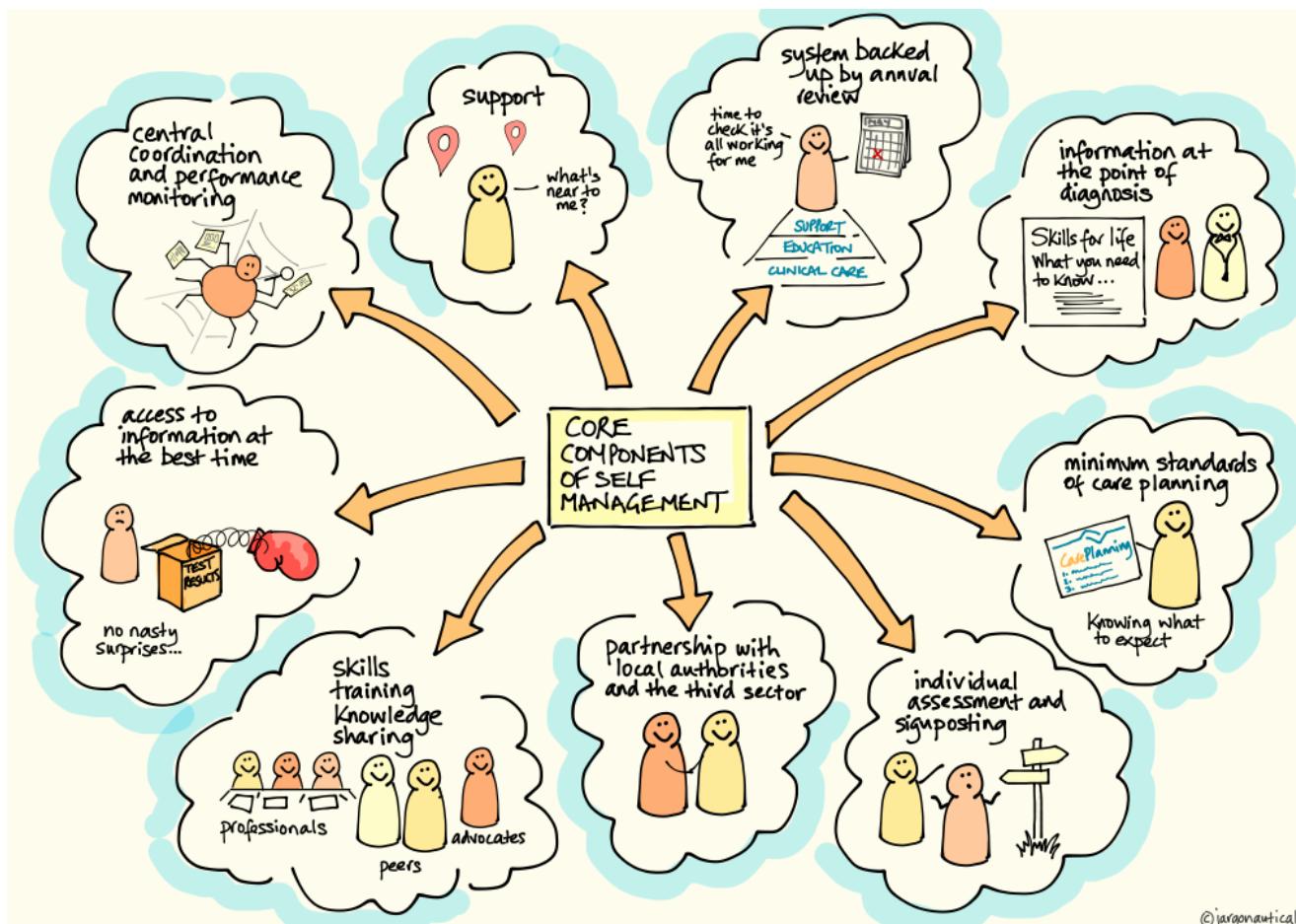
⁴ Deakin, T., Cade, J., Williams, R. and Greenwood, D C., (June 2006). Structured patient education: the Diabetes X-PERT Programme makes a difference. *Diabetic Medicine*, 23(9): pp.994-54



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What the person with diabetes thinks

Structured education is one aspect of diabetes self-management. For many people, diabetes is one of several long-term conditions they have to deal with day to day.



Feedback from South London patient engagement groups concluded that...

...people with diabetes want to feel that they have received all the information they need to understand their diabetes and self-manage effectively.

Lessons learnt from interviews with non-attenders include:

- All healthcare professionals need to provide consistent **key messages** on diabetes and how to self-manage
- Effective and useful **signposting** to local structured education is required
- Having enough **time** with a healthcare professional to ask questions and fully understand their diabetes
- Access to a **Dietitian** and practical advice for **day-to-day** implementation.

Most structured education is designed to meet these requirements yet patient uptake is generally poor.

Source: Diabetes Modernisation Initiative



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What people with Type 2 diabetes told us

Why they do not always attend

- The majority had never been offered structured education by a health professional and didn't know it existed.
- The term 'Structured Education' was off-putting. The benefits of the course were not 'sold' to them.
- The referral process felt like a tick-box exercise.
- They felt there was no individualisation.
- A more personalised approach was requested- phoning people, inviting and 'selling' the benefits of the course.
- Timing of referral - some felt that the time was wrong, as they had either just been diagnosed, or started tablets.
- Location and timing was very important - venue and accessibility (transport links/car parking) were key barriers to attendance.
- Competing commitments such as work.
- Some would have preferred modular courses and e-learning with on-line options instead.
- Did not like the idea of group learning - individual one to one education would have better met their needs.

Feedback from people who have attended

- They liked the peer support and information about diet.
- It was felt there was a lack of follow-up and need for refresher information.

"Everybody should be informed of the condition"

"When first diagnosed given medication and diet information, wanted more information but not told where to get information and support from - if you don't have the network you don't have the support"

"...no parking... so you're talking an hour and a half on the bus"

"Menu of education options when diagnosed"

Research¹⁷ has succinctly grouped the above reasons into the below three themes: these are the most common reasons for patients not to attend commissioned Structured Education courses:

- Not enough information** about the programme/perception of benefit, for example not being informed of the course by a health professional, not perceiving benefit of attending the course
- Unmet personal preferences** such as parking, competing personal issues because of work or caring for others, preference for alternatives such as internet course/one to one sessions
- Shame and stigma** of diabetes including not wanting others to know of diabetes diagnosis.

"Because I work nights, because my wife is disabled, I haven't even got time to go to the foot clinic. The answer would be no"

¹⁷ Winkley, K., Evwierhoma, C., Amiel, S A., Lempp H K., Ismail, K. and Forbes, A. (August 2014) Patient explanations for non-attendance at structured diabetes education for newly diagnosed type 2 diabetes: a qualitative study. Diabetic Medicine doi: 10.1111/dme.12556



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How to commission quality structured education



Commissioning structured education programmes for people with Type 2 diabetes must be done with effective service user engagement and must be robustly based on public health needs. As with any commissioned service there will be a need to understand accessibility to the intervention, especially in terms of uptake.



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Systematic engagement and feedback from service users

Services which have undertaken and acted on patient feedback have seen a significant improvement in patient attendance rates^{6,7}.

The Network strongly recommends the inclusion of a **patient feedback system** as part of the service specification. Each provider should be asked to routinely collect course satisfaction questionnaires from all attendees and report the findings, with remedial action plans via their internal quality and governance process and local commissioning leads.

Get involved



The Network appreciates that many of the commissioning teams and service providers are already delivering best practice and local quality and performance initiatives. We would welcome your feedback and input on the above suggestions. We are keen to further develop joint working in partnership across all CCGs to build on best practice and quality initiatives, to improve health outcomes and use of resources across South London.

It is essential to decide who the target audience should be. NICE state that education should be available to all people with newly diagnosed Type 2 diabetes. The CCG Outcome Indicator Set 2014/15 will suggest measuring this. However, people with long-standing Type 2 diabetes may also benefit from structured education. Individual CCGs should decide their local remit, especially provision for longstanding diabetes.

Consider the needs of the local people:

- Who may have multiple long-term conditions?
- Are people homebound or living in nursing/residential accommodation?
- Do they have other specific needs including learning difficulties or a mental health illness?
- What are their cultural or religious needs?

Programmes must be consistent with **NICE requirements** and/or **QISMET certification**.



Download this document

QISMET is an independent body developed to support self-management providers and commissioners to achieve the highest possible quality service for people living with long-term health conditions.

⁶ Cotter, B. and Grumitt, J., (2011). GP commissioning: Shaping diabetes care in Bexley. *Diabetes & Primary Care*, 13(6); pp.375-380. [Website](#)

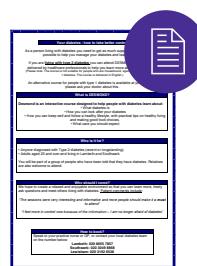
⁷ Diabetes Modernisation Initiative (2014). Living well with Diabetes, Learnings report from the Diabetes Modernisation Initiative. [Download](#)



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Service level agreement must specify:

- Method of referral – consider a self-referral process in addition to referral by healthcare professional.



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- Needs for data/ metric collection and a process to allow people with diabetes to gain access to this data.
- Timeframe of referral to first contact/appointment. Safety net to follow up non-attenders.
- Alternative education options to meet individual needs of non-attenders.
See the [menu of different providers of structured education](#).

Croydon CCG has a robust service specification for commissioning structured education, which they are happy to share.



[Download this document](#)

Electronic Administration Systems

Clinicians require skilled administration support to provide electronic patient administration systems and formal databases enabling:

- Effective management of all referrals in a timely fashion
- Effective use of their resources by improving course utilisation, and maximising attendance
- Provision of patient accessible information to maximise choice of venue and timing of course
- Effective integration of care and timely transfer of information from referral to discharge
- Systematically and routinely identify all patients who declined the opportunity to attend before or after booking on a course, enabling the service provider and GP to take timely action and follow up
- Enables access to a complete and easily accessible database to assess service performance
- Provide data that can identify “cold spots” where further initiatives from the Network and others may be required to improve patient uptake of education, and reduce the variance in delivery of NICE standards of care across all sections of the population.

Service specification key performance indicators

Commissioners should ensure that a diabetes service specification makes specific reference to structured education in terms of target audience, outcomes and should include key performance indicator metrics to ensure that the programme is being delivered effectively and widely to the intended audience.

To ensure that KPIs are routinely and robustly collected we recommend the use of electronic administration systems such as ‘Choose and Book’ to allow accurate and timely monitoring of the entire process flow.



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Data collection

This table shows data that should be regularly monitored to ensure an effectively running service and provide feedback for improvement.

Booked referrals	Completed referrals	Time from referral to first contact
<p>Suggested measure Your provider should tell you how many people are booked onto their courses compared to number referred.</p> <p>Key thought What should they be targeting? Bexley achieves between 25-70%.</p>	<p>Suggested measure Your provider could be measuring this in 2 ways – percentage attending of out all eligible and/or out of all referred.</p> <p>Key thought It's essential that you are not commissioning services that aren't being used. Without this information, you can't be sure you are meeting your population's needs.</p>	<p>Suggested measure How soon after referral has been made do you think your provider should be making first contact? And what percentage should be achieving this?</p> <p>Key thought Given that only about 50% of people who are referred will attend structured education it is essential that your provider runs a smooth service, contacting patients early to book them onto a course before motivation dwindles.</p>
<p>Suggested measure What is the waiting list like in your CCG? What percentage of people are waiting more than 3 months to attend a course? What percentage is acceptable?</p> <p>Key thought Early intervention will provide people living with diabetes the ability to self-care more effectively. A well run service, meeting the needs of its population is essential to facilitate this.</p>	<p>Suggested measure It is important to ask your provider what proportion of eligible people are not attending education courses. The other suggested key indicators may provide insight as to why people don't attend. However many barriers to attendance exist including language, culture and mobility. Most of these barriers can be overcome.</p> <p>Key thought Research shows that 50% of patients are not attending education courses. Are you commissioning the right course for your population? Is there something else that will suit them better? One size does not fit all and you may need to commission alternatives to suit your CCG.</p>	<p>Suggested measure We suggest measuring percentage of people completing a course with agreed goals.</p> <p>Key thought Given that only about 50% of people who are referred will attend structured education it is essential that your provider runs a smooth service, contacting patients early to book them onto a course before motivation dwindles.</p>



Benchmarking metrics

These metrics will be used by the HIN to measure performance between CCGs, but also between referrers (GP practices) within a CCG area. In this way it will be possible to identify hot and cold spots for referral.



Hot and cold spots

A ‘hot spot’ is where the uptake to referral rate is high whilst a ‘cold spot’ relates to referrers where the uptake to referral rate is low.

In order to understand where the cold spots lie, and to eliminate the possibility of a lack of uptake due to ineffective referrals, regular scorecards should be provided to all referrers by their structured education provider, showing them their referral uptake rates.

Structured education for Type 2 diabetes		
Data collection		
Data that should be regularly monitored to ensure an effectively running service and provide feedback for improvement:		
Key	Numerator	Denominator
Percentage booked onto course	Number of people booked onto a structured education course	Number referred to structured education
Percentage completing course	Number who complete course	Number eligible for referral (will generally be number diagnosed with type 2 diabetes within last 12 months)
Percentage of people booked who complete programme	Number who complete course	Number of people booked onto a structured education course
After referral percentage contacted within given number of working days	Number of people contacted and offered place within given number of working days	Number of people referred to structured education
Percentage offered place within three months of referral	Number of people offered place on structured education course the day of which is less than three months from the date of referral	Number of people offered place on structured education course
Percentage declining place on course who are contacted and offered alternative	Number of people declining a place on first line structured education programme who are offered an alternative education programme	Number of people initially offered place on first line structured education programme who decline signed place
Percentage discharged back to primary care with agreed goals from structured education programme	Number discharged with agreed goals from structured education programme	Number who complete course

In addition it may be important to measure:

- Total number of referrals per referrer
- Total number of people that attended the course, per referrer
- Monthly numbers of people on the waiting list
- People who did not attend the course
- Number of people not attending a first session
- Number of people who did not complete full course (if course is run over more than one session)
- Number of incomplete referrals with reason for declining referral
- Number of self-referred

[Download this document](#)



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Successful referral processes



The referrer will play a huge role in successfully engaging the person with diabetes and increasing uptake of an education course. The Lambeth and Southwark **Diabetes Modernisation Initiative** and **Diabetes UK** patient focus groups have shown that the attitude of health care professionals and information given at time of diagnosis can have a profound impact on people's ability to self-manage their condition effectively.



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Successful referral processes



I think my doctor failed me by not mentioning the DESMOND. Remove barriers? Just give out more information."



I heard about it [DESMOND] but not told about it directly [from health professional]. I don't know about the [the benefits of the] programme so I can't decide."

Whilst most people are likely to be referred by a practice/ community nurse or GP, there should be opportunity for people to self-refer as people's readiness to learn/change can vary.



The following information is highly recommended for discussion with patients when referring:

- Need to emphasise that structured education is an integral part of diabetes 'treatment'
- Give details of what the structured education course covers and the benefits of the course
- Show them the next available dates and venues
- Explain to them the referral pathway and who they will be hearing from next regarding this
- Direct them to trusted and reliable sites of information which they can read/watch for more information on Type 2 diabetes.

If you require any documents supporting the above, your structured education provider can provide them upon request or the [Health Innovation Network](#) can make them available.

A number of other innovations can be considered:

- Encouraging GPs and practice nurses to attend 'taster' sessions for structured education
- Providing skills training in motivational interviewing.

The [Quality and Outcomes Framework for General Practice 2014/5](#) provides a financial incentive for GPs to refer patients to structured education within 9 months of diagnosis. This encourages referral but provides no encouragement to attend such courses.



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Use these clips to learn about the benefits of structured education yourself or share them with people you are referring.

X-PERT testimonies on YouTube



John's testimony



Alan's testimony

DESMOND videos



Bob's testimony



Indu's testimony



Saira's testimony

Getting to grips with Type 2 diabetes

If you would like to view in other languages please see the links below:

[Gujarati](#)

[Punjabi](#)

[Polish](#)

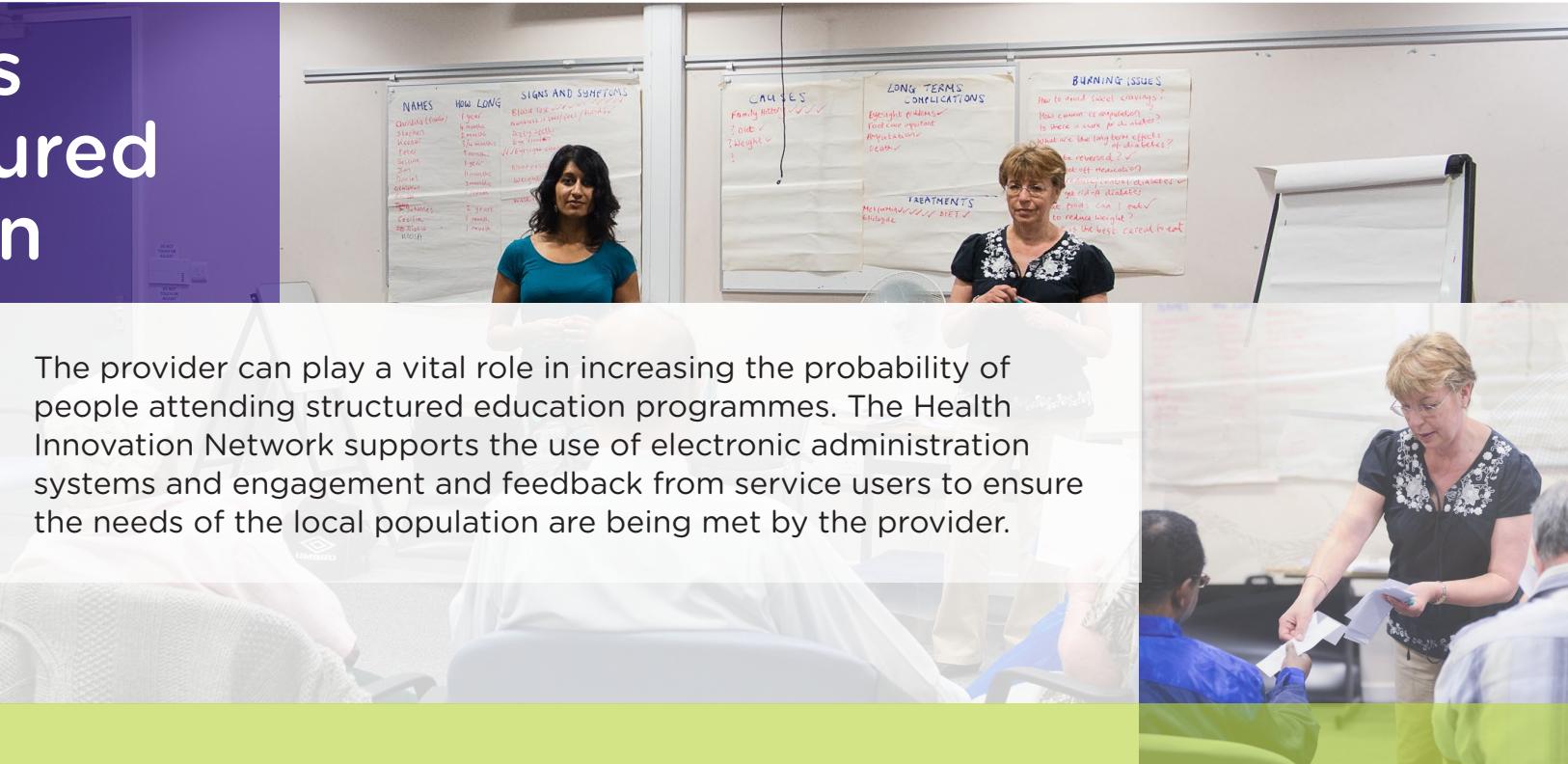
[Hindi](#)



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Providers of structured education

The provider can play a vital role in increasing the probability of people attending structured education programmes. The Health Innovation Network supports the use of electronic administration systems and engagement and feedback from service users to ensure the needs of the local population are being met by the provider.



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

The Health Innovation Network held a structured education event in May 2014, that was attended by 40 providers and clinical educators from eight different Type 2 diabetes structured education programmes. It showed the views of the providers reflected those of the service users.

Their combined experience recognised hard to reach groups that do not attend structured education:

- Those with mental health issues or physical disabilities
- Those with poor literacy or a language barrier
- People who are housebound or in a care home
- Those in prison or other involuntary residence
- Those with childcare or caring responsibilities
- The working population, especially shift workers
- The travelling community or asylum seekers.

They also identified the referrer and the referral process as a barrier to attendance, echoing the service users' experience of not 'being sold' the benefits of attending. Hence structured education needs to be explained in a positive and effective manner, with a **simple referral pathway**.

Effective referral processes

The following processes will increase the likelihood of a patient attending a course:

- Provide a variety of **times** suitable for different demographics of patients
- Provide a variety of easily **accessible** course venues taking into account bus routes, parking, disabled access etc.
- An **easy to book** service (e.g. choose and book) for booking
- A **welcome letter** to each patient referred, with clear information on what to expect on the course and how to book
- A **reminder** letter/call if patient has not been in touch to book
- A **confirmation letter** once the person has booked onto a course
- A reminder call or **text** to the patient on the week of the course
- Access and clear advertising for **self-referral** on to course.

Supporting referrers to make more effective referrals

The following information should be made available to referrers to help assist effective referrals:

- Details of the structured education course; what type of information it will cover, how the class is run, the personal benefits to the patient attending the course etc.
- Any written information should be in language that is meaningful to the service user
- A list of the next available dates and venues
- The referral pathway, when they can expect to hear regarding the outcome of their referral and any follow-up that they are required to do with the patient
- A list of trusted and reliable patient-focused sites of information for more information on Type 2 diabetes
- Access to 'patient champions' who can provide first-hand testimony of the benefits
- A list of courses they would be welcome to observe to gain further insight into the course content.

Templates for the above documents can be found in the resources section of this toolkit or found on our website: www.hin-southlondon.org



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Data collection

This table shows data that should be regularly monitored to ensure an effectively running service and provide feedback for improvement. [Download table](#)

Booked referrals	Completed referrals	Time from referral to first contact
<p>Suggested measure Measure the number of people actually booked on to a course, compared to the number of referrals made.</p> <p>Key thought This will help check capacity and that you are meeting your commissioner's needs.</p>	<p>Suggested measure We suggest measuring this in 2 ways - number completing compared to all eligible and compared to number referred.</p> <p>Key thought How many people are completing your education courses? We know that Bexley GP practices vary from 25-70%.</p>	<p>Suggested measure Your provider is likely to set a target number of days from receiving referral to making first contact, therefore you need to be measuring this?</p> <p>Key thought Patient motivation is high when they have just been told by their GP that they have diabetes. To help achieve your attendance targets you need to be contacting patients early and offering them courses that are convenient for them.</p>
<p>Suggested measure A long wait will put people off, so consider what percentage should be attending within 3 months of referral.</p> <p>Key thought 23 GP practices in Lewisham have less than 30% of their referrals actually attend a course. Early contact will boost attendance rate and show commissioners that you are providing a well run service worth investing in.</p>	<p>Suggested measure Your commissioner will be interested to see how you are dealing with people who are referred but don't attend. You therefore need to be measuring this and have a strategy in place.</p> <p>Key thought Are you contacting them? Are they offered alternative courses? Perhaps they have language or mobility barriers? At the moment 50% of referrals do not attend a course. Are you providing an alternative? Can you prove this?</p>	<p>Suggested measure All people who attend an education program should graduate with personalised goals linked to care plans. This gives them an objective and helps their GP too.</p> <p>Key thought How often do you discuss personalised goals at the end of the course? Are you communicating this to their GP?</p>



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Electronic Administration Systems

Electronic patient administration systems and formal databases should be used by teams to:

- Effectively manage all referrals in a timely fashion
- Effectively use their resources by improving course utilisation, and ensuring courses run with maximised attendance
- Provide a systemic and easily accessible recording system enabling patients to have maximum choice as to time and location of appointment
- Support effective integration of care and transfer of information in a timely fashion from referral to discharge
- Systematically and routinely identify all patients who declined the opportunity to attend before or after booking on a course, enabling the service provider and GP to take timely action and follow up
- Enable easy access to a database to assess service performance
- Provide 'hot and cold spots' referrer data to all the referrers (e.g. scorecard) on a routine basis to ensure they see the results of their referrals and have the opportunity to make them more effective if necessary.

Systematic engagement and feedback from service users

Structured education services should routinely take account of the service user's views on delivery and accessibility.

Services, which have undertaken and acted on patient feedback, have seen a significant improvement in patient attendance rates. The network strongly recommends the inclusion of a patient feedback system as part of the service specification.

Providers should routinely collect course satisfaction questionnaires from all attendees and report the findings, with remedial action plans via their internal quality and governance process and local commissioning leads.



I think I prefer one to one, I don't think I prefer the group at all...I think it is erm, you know, you in a group of strangers with people you've never met before. I don't think I'll like it."



I didn't tell anybody [family, friends, including partner]. I keep it to myself. I don't want it [diabetes].... I don't want to go [to the DESMOND course] because I might see someone I know."



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers

If you would like a copy of the Menu of Providers of Structured Education in Excel format please email hin.southlondon@nhs.net

It is clear that people with Diabetes should be offered a range of options to allow them to learn the skills to self-manage their life long condition. Individual CCGs should ensure the services commissioned meet the local needs of their population and alternatives are offered to those who don't attend the first line structured education course. The following tables show there is a large range of structured education available.

Type of programme	Group education programmes	Education aimed at BME groups	Education aimed at hard to reach groups	One-to-one intervention	Online intervention
Links to providers	<ul style="list-style-type: none"> • DESMOND <ul style="list-style-type: none"> - newly diagnosed For: newly diagnosed Type 2 diabetes or established diabetes • Self Management UK For: anyone with a long term condition • X-PERT Diabetes Programme For: people with Type 2 diabetes or at risk of developing it. • Conversation Maps™ For: newly diagnosed or established Type 2 diabetes 	<ul style="list-style-type: none"> • DIMPLE For: people with Type 2 diabetes or at risk of developing it • DESMOND BME For: BME people with newly diagnosed Type 2 diabetes or established diabetes • Apnee Sehat For: newly diagnosed Type 2 diabetes of South Asian languages Bengali, Urdu, Hindu and Punjabi 	<ul style="list-style-type: none"> • STEPS to your healthy future For: newly diagnosed or established Type 2 diabetes 	<ul style="list-style-type: none"> • Diabetes Manual For: Type 2 diabetes with an HbA1c over 7%, people with Type 2 diabetes who need or wish for a one-to-one programme delivered in usual diabetes time 	<ul style="list-style-type: none"> • HeLP-Diabetes: Healthy living for people with Diabetes For: people with Type 2 diabetes • Diabetes UK – Type 2 Diabetes and me For: people with Type 2 diabetes



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: **Group education programmes**

DESMOND - newly diagnosed

Programme overview

- 1 Six hours of education delivered by two trained educators to groups of 10 people who can also bring a partner with them.
- 2 In 1 day or 2 half-day formats, newly diagnosed module – for those within first 12 months of diagnosis.

Target audience

Newly diagnosed Type 2 diabetes or established diabetes

Outcome evidence base?

Yes



NICE¹ Compliant and quality assured?

Yes



What is the cost* per patient?

*greater economy of scale with the more courses run

£76¹⁵

Is there any user evaluation/feedback?

Yes



Is it used nationally?

National and International, Ireland, Gibraltar, Australia and about to launch in the Middle East

Available in different languages?

Yes, language of educator



Why choose this programme? What are the USPs?

- 1 Most widely used structured education programme for Type 2 diabetes in the UK.
- 2 Rigorous quality assurance of all educators so they all undergo mentoring and assessment of their behaviours in terms of delivery.
- 3 Range of education for ongoing training e.g. learning disabilities, mental health.
- 4 Can be delivered by peer educators.



Contact

www.desmond-project.org.uk

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)

¹⁵ Gillett, M., Dallosso, H.M., Dixon, S., Brennan, A., Carey, M.E., Campbell, M.J., et al. Delivering the diabetes education and self management for ongoing and newly diagnosed (DESMOND) programme for people with newly diagnosed type 2 diabetes: cost effectiveness analysis. BMJ 2010; 341:c4093



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: **Group education programmes**

Self Management UK

Programme overview

- 1 A charity which runs generic and disease specific programmes. Diabetes specific is X-PERT.
- 2 Also run the Expert patient programme which is peer led six week programme suitable for any long term condition.
- 3 Self-management for life is also a generic programme with 7 weekly sessions, 3 hours long.
- 4 Sessions are all peer led by people with long term conditions.

Target audience

Anyone with a long term condition

Outcome evidence base?

Yes



NICE¹ Compliant and quality assured?

Yes



What is the cost per patient?

N/A

Is there any user evaluation/feedback?

Yes



Is it used nationally?

National programme

Available in different languages?

Yes, language of educator



Why choose this programme? What are the USPs?

- 1 All programmes run by peer educators who have a long term condition.
- 2 Delivered using a range of methods to suit individual needs e.g. different languages, different community settings, for those with communication difficulties or hearing impairment, on-line.
- 3 Can help self-manage multiple conditions.



Contact

www.selfmanagementuk.org/

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: **Group education programmes**

X-PERT Diabetes Programme

Programme overview

Group education delivered by trained educators: 2.5 hour sessions over 6 weeks with annual follow-up sessions.

Target audience

People with Type 2 diabetes or at risk of developing it

Outcome evidence base?

Yes



NICE¹ Compliant and quality assured?

Yes



What is the cost per patient?

£65¹⁶

Is there any user evaluation/feedback?

Yes



Is it used nationally?

National programme

Available in different languages?

Yes, language of educator



Why choose this programme? What are the USPs?

- 1 All educator training is competency-based and supports continual professional development.
- 2 Designed to be suitable regardless of educational background, literacy skills, spoken language, or disabilities such as learning or mental health.
- 3 Can be delivered by peer educators



Contact

www.xperthealth.org.uk/

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)

¹⁶ Deakin T. The Diabetes Pandemic: Is structured education the solution or an unnecessary expense? Practical Diabetes 2011; 28; 1-14



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: **Group education programmes**

Conversation Maps™

Programme overview

- 1 Group education, four maps available. Two for newly diagnosed – ‘Managing my diabetes’ and ‘Diabetes and healthy lifestyle’.
- 2 Sponsored by Eli Lilly and supported by Diabetes UK.
- 3 Delivered by one trained health care professional – usually a diabetes specialist nurse or dietitian for the second map based around food choices over 2 hours.

Target audience

Newly diagnosed or established Type 2 diabetes

Outcome evidence base?

Yes



NICE¹ Compliant and quality assured?

No (meets NICE criteria except Quality assurance and audit. Internal QA using toolkit provided by Lilly based on reflection and self/peer evaluation)

What is the cost per patient?

N/A

Is there any user evaluation/feedback?

Yes



Is it used nationally?

National programme. Used in 105 countries and 34 languages. Extensively used in Canada and US since 2006

Available in different languages?

Yes, language of educator



Why choose this programme? What are the USPs?

- 1 Developed in partnership with Diabetes UK.
- 2 The map tools are flexible in delivery and online modules are available for those who have attended a group session.
- 3 Small groups may be preferred by some individuals.
- 4 Widely used nationally and Internationally



Contact

www.lillypro.co.uk/diabetes/hcps

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)



1	2	3	4	5	6	7	8	9
Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: **Education aimed at BME groups**

DIMPLE

Programme overview

- 1 Peer led prevention and self management programme hosted by Hammersmith & Fulham.
- 2 Volunteers recruited to undertake champion, peer educators or peer mentor roles, BME particularly targeted.
- 3 Branded as Know diabetes.
- 4 Peer educators work along side dietitians or diabetes specialist nurses to deliver X-PERT programmes.
- 5 Peer educators are recruited from the local diabetes patient groups, must have attended X-PERT or another form of structured education. No formal qualifications needed.

Target audience

People with Type 2 diabetes or at risk of developing it

Outcome evidence base?

Yes



NICE¹ Compliant and quality assured?

Yes, educators undergo the same training and evaluation as the health professionals delivering the programme but none give clinical advice



What is the cost per patient?

£60,000 was initial year start up costs for 60 volunteers In Fulham & Hammersmith

Is there any user evaluation/feedback?

Yes



Is it used nationally?

No

Available in different languages?

Yes, language of educator



Why choose this programme? What are the USPs?

- 1 Can double number of courses available as only one health care professional needed rather than two.
- 2 Can use the educators to make phone calls to encourage attendance.



Contact

www.knowdiabetes.org.uk/

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)



1	2	3	4	5	6	7	8	9
Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: **Education aimed at BME groups**

DESMOND BME

Programme overview

DESMOND but delivered with interpreters. DESMOND can be culturally adapted to meet the needs of individual groups

Target audience

BME people with newly diagnosed Type 2 diabetes or established diabetes

Outcome evidence base?

Yes



NICE¹ Compliant and quality assured?

Yes



What is the cost* per patient?

*greater economy of scale with the more courses run

£76¹⁵

Is there any user evaluation/feedback?

Yes



Is it used nationally?

National and International, Ireland, Gibraltar, Australia and about to launch in the Middle East

Available in different languages?

Yes, language of educator



Contact

www.desmond-project.org.uk

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)

¹⁵ Gillett, M., Dallosso, H.M., Dixon, S., Brennan, A., Carey, M.E., Campbell, M.J., et al. Delivering the diabetes education and self management for ongoing and newly diagnosed (DESMOND) programme for people with newly diagnosed type 2 diabetes: cost effectiveness analysis. BMJ 2010; 341:c4093



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: **Education aimed at BME groups**

Apnee Sehat

Programme overview

- 1 A social enterprise aimed at improving health in the South Asian population of the Midlands.
- 2 Group education programmes for newly diagnosed.
- 3 Also runs like a one stop shop at the person's GP practice in own language. 15 minutes with a consultant, 30 minutes with a diabetes specialist nurse providing one to one education plus telephone and one face to face follow up.

Target audience

Newly diagnosed Type 2 diabetes of South Asian languages – Bengali, Urdu, Hindu and Punjabi

Outcome evidence base?

No. Undergoing pilot evaluation and research currently

NICE¹ Compliant and quality assured?

No

What is the cost per patient?

Pilot estimated to be £250 per patient

£250

Is there any user evaluation/feedback?

Yes



Is it used nationally?

No

Available in different languages?

Yes. Bengali, Urdu, Hindu and Punjabi



Why choose this programme? What are the USPs?

- 1 Aimed at specific 'harder to reach' communities.
- 2 Opportunities exist to adapt this programme for different ethnic populations. [Please contact the HIN for more information.](#)



Contact

www.apneesehat.net/

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: **Education aimed at hard to reach groups**

STEPS to your healthy future

Programme overview

- 1 A bespoke year-long programme. Ten weekly 1 hour sessions for up to ten in a group. Followed by 9.5 months of regular support and two monthly facilitated sessions.
- 2 Centred on behavioural change, nutrition and movement.

Target audience

Newly diagnosed or established Type 2 diabetes

Outcome evidence base?

Yes



NICE¹ Compliant and quality assured?

Yes



What is the cost per patient?

£250 per patient for the year

£250

Is there any user evaluation/feedback?

Yes



Is it used nationally?

No

Available in different languages?

No

Why choose this programme? What are the USPs?

- 1 Delivered outside the NHS - by fitness professionals rather than healthcare professionals.
- 2 Year long programme is the only one of its kind in the UK.



Contact

www.stepstoyourhealthyfuture.co.uk/

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: **One to one intervention**

Diabetes Manual

Programme overview

- 1 One to one programme, 12 week programme of 1 hour sessions.
- 2 Delivered by practice nurses or diabetes specialist nurses.
- 3 Includes a patient manual, relaxation CD, CD of frequently asked questions, telephone follow up at weeks 1, 5 and 11.

Target audience

Type 2 diabetes with an HbA1c over 7%, people with Type 2 diabetes who need or wish for a one-to-one programme delivered in usual diabetes time.

Outcome evidence base?

Yes



NICE¹ Compliant and quality assured?

Yes



What is the cost per patient?

*excluding health care professional time

£31.25*

Is there any user evaluation/feedback?

Yes



Is it used nationally?

No

Available in different languages?

Yes. South Asian resources available



Why choose this programme? What are the USPs?

- 1 Can be delivered in usual diabetes clinical time, with practice nurse (trained as diabetes manual facilitator).
- 2 People work at own pace and have the manual and relaxation CD for future reference.
- 3 Available to those who decline or unable, or prefer not to have group based structured education.
- 4 No venue needed.
- 5 Skills can be used for all long term health conditions.
- 6 Culturally diverse programmes available.
- 7 Likely to go online in 2014/15.



Contact

www.successfuldiabetes.com/

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: [Online intervention](#)

HeLP-Diabetes: Healthy living for people with diabetes

Programme overview

- 1 Internet based self-management tool, NIHR funded RCT to meet unmet need.
- 2 DESMOND non-attenders contacted by trained volunteer, conversation map used to identify barriers and signpost to HeLP as alternative, 2 parallel studies – RCT and implementation study.

Target audience

People with Type 2 diabetes

Outcome evidence base?

No. Undergoing research currently

NICE¹ Compliant and quality assured?

N/A

What is the cost per patient?

N/A

Is there any user evaluation/feedback?

Yes



Is it used nationally?

No

Available in different languages?

No



Contact

[Elizabeth Murray, Professor of e-Health and Primary Care, University College London](#)

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)



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Why a toolkit?	Type 2 diabetes	Introduction to structured education	What the person with diabetes thinks	Commissioning	Referring	Providers	Menu of Type 2 education providers	Next steps and resources

Menu of Type 2 education providers: [Online intervention](#)

Diabetes UK - Type 2 Diabetes and me

Programme overview

Online education tool available for free on the Diabetes UK website. Can be used as a stepping stone to accessing other types of structured education.

Target audience

People with Type 2 diabetes

Outcome evidence base?

No

NICE¹ Compliant and quality assured?

No

What is the cost per patient?

Free

Is there any user evaluation/feedback?

Yes



Is it used nationally?

Yes



Available in different languages?

No

Why choose this programme? What are the USPs?

- 1 Internet education resource via Diabetes UK for people with Type 2 diabetes.
- 2 Can be used as a stepping stone to other programmes.



Contact

www.type2diabetesandme.co.uk/

¹ NICE, Clinical Guidance 87 (2014) Type 2 Diabetes: The Management of Type 2 Diabetes. [Download](#)



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Next steps

We hope you find this toolkit useful in helping you deliver high quality and effective structured education to people with Type 2 diabetes. If you would like further support or find out any more about the work of the HIN please contact us on our e-mail:

Hin.southlondon@nhs.net or via our website at www.hin-southlondon.org

Resources

You can find all the downloadable resources in this toolkit at the [Health Innovation Network website](#). This will be updated regularly and also contains examples of resources for use in day to day clinical practice.



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HeLP-Diabetes

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Diabetes Lead, Bexley Health Limited

Trevor Critchley
Fellow of Self-Management Support
The Health Foundation

Richard Dale
Previously Project Manager, DMI

Heather Daly
Diabetes Consultant Nurse
UHL Leicester Diabetes Centre

Dr Trudi Deakin
Founder and CEO, X-PERT

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Helen Gibson
Diabetes Specialist Nurse, Haverstock Healthcare Limited

Jo Greenfield
Regional Diabetes Manager, Eli Lilly and Company

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Chris Grumble
Team Administrator and Education Co-ordinator
St Georges Healthcare NHS trust

Katie Hacker
Diabetes Dietitian, Whittington Health

Lorna Hughes
Head of Public Engagement, Lewisham

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Head of Service Delivery, Diabetes UK

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Suzanne Lucas
Previously Clinical Lead for Self-Management, DMI

Mini Mangat
Director of Operations and Business Development,
Apnee Sehat

Alex Manya
Previously Head of Service Design & Analysis, DMI

Deirdre McGowan
Community Diabetes Nurse
Lambeth Diabetes Intermediate Care Team

Jen Nash
Clinical Psychologist, CNWL NHS Trust

Clare Neely
Community Diabetes Specialist Nurse, Kingston

Rebecca Owen
HeLP-Diabetes

Alan Partington
Service user, Diabetes UK Lewisham group

Helen Noakes
Senior Diabetes Specialist Nurse
Lewisham and Greenwich NHS Trust

Judith Ralphs
Senior Public Health Officer, Westminster

Roz Rosenblatt
London Region Manager, Diabetes UK

Caroline Rook
Community Diabetes Nurse
Lambeth Diabetes Intermediate Care Team

Kuldip Sembhi
NHS Implementation Lead - Diabetes,
Merck, Sharp & Dohme Limited

Eva Sisa
Care Manager, Guys Hospital

Jane Stopher
Director, Diabetes Modernisation Initiative (DMI)

Professor Jackie Sturt
Professor of Behavioural Medicine in Nursing
Kings College London

Holly Stirling
Care Manager, Guys Hospital

Bernie Stribling
Director, DESMOND

Pauline Strugnell
Senior Specialist Nurse-team leader
Sutton & Merton community services

Stephanie Sweeney
Specialist Diabetes Dietitian, St Georges Healthcare

Sandra Tomlinson
Peer Support Worker, Metropolitan Housing Partnership

Jola Turowska
Diabetes Specialist Nurse, Lewisham and Greenwich

Krishna Wadher
Senior Specialist Diabetes Dietitian
Guys & St Thomas' NHS Trust

Kate Walker
Diabetes and You

Rosie Walker
Education Director, Successful Diabetes

Dr Kirsty Winkley
NIHR Post-doctoral Fellow & Lecturer in
Diabetes and Psychology South London CRN



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