X-PERT Audit Results

2021

X-PERT Health HQ
Linden Mill
Linden Road
Hebden Bridge
West Yorkshire
HX7 7DP

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Introduction

At X-PERT Health, our aim is to provide members of the public and healthcare professionals with effective education that helps prevent or manage diabetes and other long-term health conditions associated with obesity. A person with diabetes spends, on average, only a few hours with a healthcare professional every year. For the remaining 8,757 hours they have to manage their condition themselves. Structured education is therefore an integral part of care to help people self-manage or prevent long-term health conditions by giving them the skills, knowledge and confidence in order to do so.

Current guidelines recommend that every person with diabetes and/or their carer and those eligible for a lifestyle weight management service should be offered well-designed and well-implemented education. Whilst there has been an increase in the number of people offered education in recent years, nationwide attendance is still low. An improvement in attendance, engagement, and support of diabetes and lifestyle weight management education for adults is needed as they have been shown to:

- improve day-to-day self-management, which affects quality of life and engagement with care
- improve clinical markers such as body weight, blood glucose, blood pressure and blood lipid profile
- reduce the risk of developing other long-term health conditions and serious complications

X-PERT Health has developed a range of structured education programmes that meet nationally agreed criteria (NICE 2016/SIGN 2017). The X-PERT Diabetes Programme has been shown to be effective in improving health and quality of life outcomes in people with newly diagnosed and existing diabetes both in a randomised controlled trial (RCT) and in routine national implementation (Deakin et al, 2006 & 2011). The X-PERT Insulin, X-PERT Weight and X-PERT Diabetes Digital Programmes were developed following the successes of this programme.

Self-management programmes have also been investigated and have shown to be the most cost effective, with one quality-adjusted life-year (QALY) gained costing less than €20,000 for the X-PERT Diabetes Programme (Jacobs-Van Der Bruggen, 2009).

Audit and reporting outcomes is specified in current guidance for implementing diabetes and lifestyle education. The X-PERT audit database was developed so that organisations can audit implementation against audit standards, which are based on the outcomes of the X-PERT RCT and national targets (see page 3), and can compare their effectiveness to the all centres mean. It is crucial to assess whether implementation of the X-PERT Programmes result in the improvement to health and wellbeing that was seen in the published clinical trial.

There were 59 organisations registered on the national X-PERT audit database for 2019-2020. Forty-eight of these organisations (81%) entered sufficient data to be included in the 2021 national audit report.

Audit standards

The following audit standards have been used to benchmark the outcomes from X-PERT Programme implementation.

Outcome	Audit standard from RCT	Audit standard from national target
Number of participants per programme	----------	Structured education should be offered to every person and/or their carer at diagnosis. The audit standard is to deliver to at least 1,000 participants per year.
Participant attendance	≥ 95% attend at least one session ≥ 80% completer	People will complete the programme if they feel they are benefitting from attending. If organisations experience poor attendance they should contact participants to investigate the reason for the poor attendance and how it could be improved.
Participant satisfaction	≥ 90%	NICE Quality Statements 2 & 3, Outcome: "patient satisfaction with ability to self-manage their diabetes after attending a structured education programme".
Participant empowerment	≥ 10% increase from baseline	NICE Quality Standard for adults with diabetes.
Glycated haemoglobin	≥ 4 mmol/mol reduction at 6 months and ≥ 6 mmol/mol reduction at 12 months	< 48 mmol/mol normoglycaemia < 53 mmol/mol good diabetes control < 58 mmol/mol QOF target
Outcome	**Audit standard from RCT**	**Audit standard from national target**
Body weight / BMI	No increase	4 kg or 5-10% weight loss
Waist circumference	≥ 2 cm reduction	< 80 cm females < 94 cm males

Systolic blood pressure	≥ 5 mmHg reduction (if relevant)	< 130 mmHg Type 1 and Type 2 with microvascular complications < 140 mmHg Type 2 (no complications)
Diastolic blood pressure	----------	< 80 mmHg
HDL cholesterol	----------	≥ 1.2 mmol/l females ≥ 1.0 mmol/l males
Total cholesterol to HDL	----------	----------
Triglycerides	----------	< 1.7 mmol/l
Triglyceride to HDL ratio	----------	< 0.87
Prescribed diabetes medication	50% of participants will have either reduced diabetes medication or have remained on the same dose.	----------

All centres results – data collected since launch (full mean data set)

The *all centres* report changes almost on a daily basis as organisations enter data, but the main outcomes have remained consistent for several years. All audit standards from the RCT have been met for the full data set, except for waist circumference, which fell slightly short of the ≥ 2 cm reduction target, and uptake (percentage who attended ≥ 1 session), which fell short of the 95% target at 80.9%.

*N.B. This report includes **matched participant data**, i.e. data is only included for each variable for participants who had the relevant data recorded at baseline **and** the stated post-programme time point. The 6 and 12 month results are not necessarily based on data from the same participants.*

X-PERT Programmes Report: All Localities (matched)- All Course Types- 01 Sep 2005 to 24 Oct 2021

Number of X-PERT programmes run in this period	13,611	
Total number participants registered	144,729	
Total number who attended 1 session	117,026	
Total percentage who attended 1 session	80.9%	
Total number who attended 4 or more sessions	93,512	
Total percentage who attended 4 or more sessions	79.9%	
Mean number of attendees per programme	9	
Attended Annual Update Module	23.1%	
Evaluation	**6 Weeks**	
Mean program evaluation score	94.4%	
No.(%) programmes with evaluation score	9,262 (68%)	
Empowerment	**Baseline:**	**6 Weeks:**
Participant Empowerment Score (1-5)	3.52	4.29
Participant Empowerment Score % Change		21.9%
No. (%) programmes with empowerment scores	8,863 (65.1%)	8,749 (64.3%)

Clinical Data

	6 month mean	SD (σ)	6 months change from baseline	95% CI	12 month mean	SD (σ)	1 year change from baseline	95% CI
Weight (Kg)	87.3	20.3	-2.0	-2.1, -1.9	85.6	20.0	-2.1	-2.2, -2.1
BMI (Kg/m²)	30.9	6.3	-0.7	-0.7, -0.7	30.6	6.2	-0.7	-0.7, -0.7
Waist Circumference (cm)	102.0	15.0	-1.7	-1.8, -1.6	102.7	14.5	-1.6	-1.7, -1.5
HbA1c (mmol/mol)	54.4	14.8	-7.2	-7.3, -7.2	55.0	15.0	-6.9	-6.9, -6.9
Fasting Blood Glucose (mmol/l)	7.3	2.5	-0.9	-1.0, -0.8	7.3	2.6	-0.8	-0.9, -0.7
Systolic Blood Pressure (mmHg)	132	13	-2	-2, -2	131	14	-1	-1, -1
Diastolic Blood Pressure (mmHg)	76	9	-2	-2, -2	76	9	-1	-1, -1
Total Cholesterol (mmol/l)	4.2	1.1	-0.3	-0.3, -0.3	4.2	1.0	-0.3	-0.3, -0.3
LDL Cholesterol (mmol/l)	2.3	0.9	-0.2	-0.2, -0.2	2.2	0.8	-0.3	-0.3, -0.3
HDL Cholesterol (mmol/l)	1.3	0.5	0.0	0.0, 0.0	1.3	0.5	0.0	-0.0, 0.0
Non HDL Cholesterol (mmol/l)	3.0	1.0	-0.3	-0.3, -0.3	2.9	1.0	-0.4	-0.4, -0.4
Total Cholesterol to HDL Ratio	3.5	1.4	-0.4	-0.4, -0.4	3.5	1.3	-0.4	-0.4, -0.4
Triglycerides (mmol/l)	1.7	1.0	-0.2	-0.2, -0.2	1.7	1.0	-0.2	-0.2, -0.2
Triglycerides to HDL Ratio	1.5	1.2	-0.2	-0.2, -0.2	1.5	1.4	-0.2	-0.2, -0.2

All centres mean results: 1st January 2019 to 31st December 2020

X-PERT Programmes Report: All Localities (matched)- X-PERT Diabetes 01 Jan 2019 to 31 Dec 2020

Number of X-PERT programmes run in this period:	1,501	
Total number registered:	20,232	
Total number who attended 1 session:	14,826	
Total percentage who attended 1 session:	73.3%	
Total number who attended 4 or more sessions:	11,195	
Total percentage who attended ≥ 4 sessions:	75.5%	
Mean number of attendees per programme:	10	
Attended Annual Update Module:	0.2%	
Evaluation	**6 Weeks**	
Mean program evaluation score	95.7%	
No.(%) programmes With evaluation score	1,217 (81.1%)	
Empowerment	**Baseline**	**6 Weeks**
Participant Empowerment Score (1-5)	3.73	4.51
Participant Empowerment Score % Change		20.9%
No. (%) programmes With empowerment scores	1,251 (83.3%)	1,225 (81.6%)

There have been 826 fewer programmes delivered in 2019-2020 compared to 2018-2019 resulting in 9,423 fewer patients being able to access structured education. Presumably this is due to the COVID-19 pandemic and this will ideally be addressed moving forwards by delivering virtual or digital programmes if social distancing regulations are necessary.

	2018 - 2019	**2019 -2020**	**Percentage change**
Number of programmes	2,327	1,501	-36%
Number of patients	24,249	14,826	-39%

Clinical Data

	6 month mean	SD (σ)	6 month change from baseline	95% CI	12 month mean	SD (σ)	1 year change from baseline	95% CI
Weight (Kg)	86.4	21.0	-2.8	-3.0, -2.6	83.0	19.6	-2.3	-2.5, -2.1
BMI (Kg/m2)	30.5	6.4	-1.0	-1.1, -0.9	30.0	6.1	-0.8	-0.9, -0.7
Waist Circumference (cm)	102.3	12.9	-1.9	-2.2, -1.6	101.1	14.5	-3.3	-3.7, -2.9
HbA1c (mmol/mol)	54.5	14.6	-8.5	-8.6, -8.4	55.8	15.4	-7.7	-7.8, -7.6
Fasting Blood Glucose (mmol/l)	7.2	2.7	-1.3	-1.6, -1.0	7.7	3.1	-1.2	-1.6, -0.9
Systolic Blood Pressure (mmHg)	129	12	-4	-4, -4	129	13	-2	-2, -2
Diastolic Blood Pressure (mmHg)	76	8	-2	-2, -2	77	9	-1	-1, -1
Total Cholesterol (mmol/l)	4.3	1.1	-0.2	-0.2, -0.2	4.2	1.1	-0.2	-0.2, -0.2
LDL Cholesterol (mmol/l)	2.4	1.0	-0.3	-0.4, -0.2	2.2	0.9	-0.3	-0.4, -0.2
HDL Cholesterol (mmol/l)	1.3	0.4	0.0	0.0, 0.0	1.3	0.4	0.0	0.0, 0.0
Non HDL Cholesterol (mmol/l)	3.0	1.0	-0.3	-0.3, -0.2	2.9	1.1	-0.3	-0.4, -0.3
Total Cholesterol to HDL Ratio	3.6	1.1	-0.3	-0.3, -0.2	3.5	1.2	-0.4	-0.4, -0.3
Triglycerides (mmol/l)	1.6	1.3	-0.3	-0.4, -0.2	1.9	1.1	-0.2	-0.3, -0.1
Triglycerides to HDL Ratio	1.6	1.3	-0.3	-0.4, -0.2	1.7	1.2	-0.2	-0.3, -0.1

Comparison with the full data set and the 2021 audit

As stated above, the COVID-19 pandemic has impacted on the number of programme delivered between 1st January 2019 and 31st December 2020 with 36% fewer programmes and 39% fewer patients than in the 2020 audit report. As the initial lockdown wasn't until March 2020, this suggests that structured education was largely curtailed between March and December 2020.

Furthermore, the percentage of people taking up the opportunity to attend is 73.3%, which is lower than the full mean data set score of 80.9%. There is variation between organisations with some having a much better uptake than others. The number of people completing the programme has slightly decreased since the 2020 Audit Report 76.4% to 75.5%, but the evaluation score has remained similar at 95.7% and the increase in empowerment has also remained the same at 21%. The mean number of participants per programme has remained the same at 10 although variation exists between organisations.

This is the first year that organisations have been able to offer flexibility in the style of delivery with either group-based virtual delivery (delivered via video conferencing using platforms such as MS Teams or Zoom) or self-directed learning with the X-PERT Diabetes Digital Programme with individual health coaching being added to the menu of options and we have compared these to the full audit report in the table below:

Comparison between all centres data with virtual and digital delivery styles – 1st Jan 2019 to 31st Dec 2020			
	All	Virtual	Digital
Number of X-PERT Programmes run in this period:	1,501	113	N/A
Total number registered:	20,232	767	444
Total number who attended 1 session:	14,826	510	216
Total percentage who attended 1 session:	73.3%	66.5%	48.6%
Total number who attended 4 or more sessions:	11,195	448	106
Total percentage who attended ≥ 4 sessions:	75.5%	87.8%	49.1%
Mean number of attendees per programme:	10	5	---
Attended Annual Update Module:	0.2%	0%	---
Mean program evaluation score	95.7%	92.1%	88.3%
Participant Empowerment Score % Change	20.9%	32.1%	7.2%

Matched participant data shows that, between 2019 and 2020, X-PERT Programme implementation has resulted in a mean weight loss of 2.8kg (6 months) and 2.3kg (12 months) for X-PERT Diabetes. This is similar to the year before but greater than the full mean data set for 6 months (-2.0kg) and 12 months (-2.1kg), respectively. One reason for this may be because the curriculum has been updated with the scientific evidence that supports people in adopting a sustainable

dietary approach which enables them to achieve their health goals, whilst recognising that one size does not fit all. This is the first audit for the X-PERT Weight Programme and the mean reduction in weight is 4.9kg at 3 months and 6.8kg at 6 months.

A mean reduction in HbA1c values from baseline is evident at both 6 months (-8.5 mmol/mol) and 12 months (-7.7mmol/mol). This is a similar reduction to the 2020 audit but an improvement on the full mean data set at both 6 months (-7.0mmol/mol) and 12 months (-6.8mmol/mol).

Comparison of individual organisation outcomes 1st January 2019 to 31st December 2020

The 2021 awards are for matched participant data entered between 1st January 2019 and 31st December 2020. The mean value for each outcome has been compared between organisations. **Data was only included if there was at least one set of matched participant data (N.B. "matched data" means that a clinical indicator had been recorded for a patient at both baseline and post programme for the time point in question)**. As some participants had data recorded at baseline and 6 months and others at baseline and 12 months, the time points include different patients and are therefore not comparable. The number of matched sets was taken into consideration for each health outcome award, i.e. outcomes were given greater weighting where they are based on a larger number of participants.

Organisations and abbreviations

Below is a table of the organisations and/or freelance educators who are registered on the X-PERT Audit Database. Organisation names have been abbreviated so that they clearly display on the graphs.

Organisations highlighted in red have not entered any data onto the audit database between 1st January 2019 and 31st December 2020 and were therefore not included in the audit. Orange highlights indicates that only process data and no clinical data has been added. Green highlights indicates both process and clinical data has been entered.

ABBREVIATED	**OFFICIAL NAME**
ABUHB - CAERPHILLY	ABUHB - Caerphilly
ABUHB - MONMOUTHSHIRE	ABUHB - Monmouthshire
ABUHB - NEWPORT	ABUHB - Newport
ABUHB - TORFAEN	ABUHB - Torfaen
AIREDALE, WHARFEDALE & CRAVEN	Airedale, Wharfedale & Craven CCG
ARGYLL & BUTE	Argyll & Bute Community Health Partnership
AUSTRALIA	Real Food Coaching (Helen Chauhan)
BARNSLEY	Barnsley Hospital NHS FT
BARTS - LONDON	Barts Health NHS Trust
BASSETLAW	Nottinghamshire Healthcare NHS FT - NHS Bassetlaw CCG
BERKSHIRE HEALTHCARE	Berkshire Healthcare NHS FT
BERMUDA	Island Nutrition and Foundation Health
BETSI CADWALADR	Betsi Cadwaladr University Health Board
BEXLEY HEALTH	Bexley Health Neighbourhood Care CIC
BIRMINGHAM - E&N	Birmingham Community Healthcare - E&N

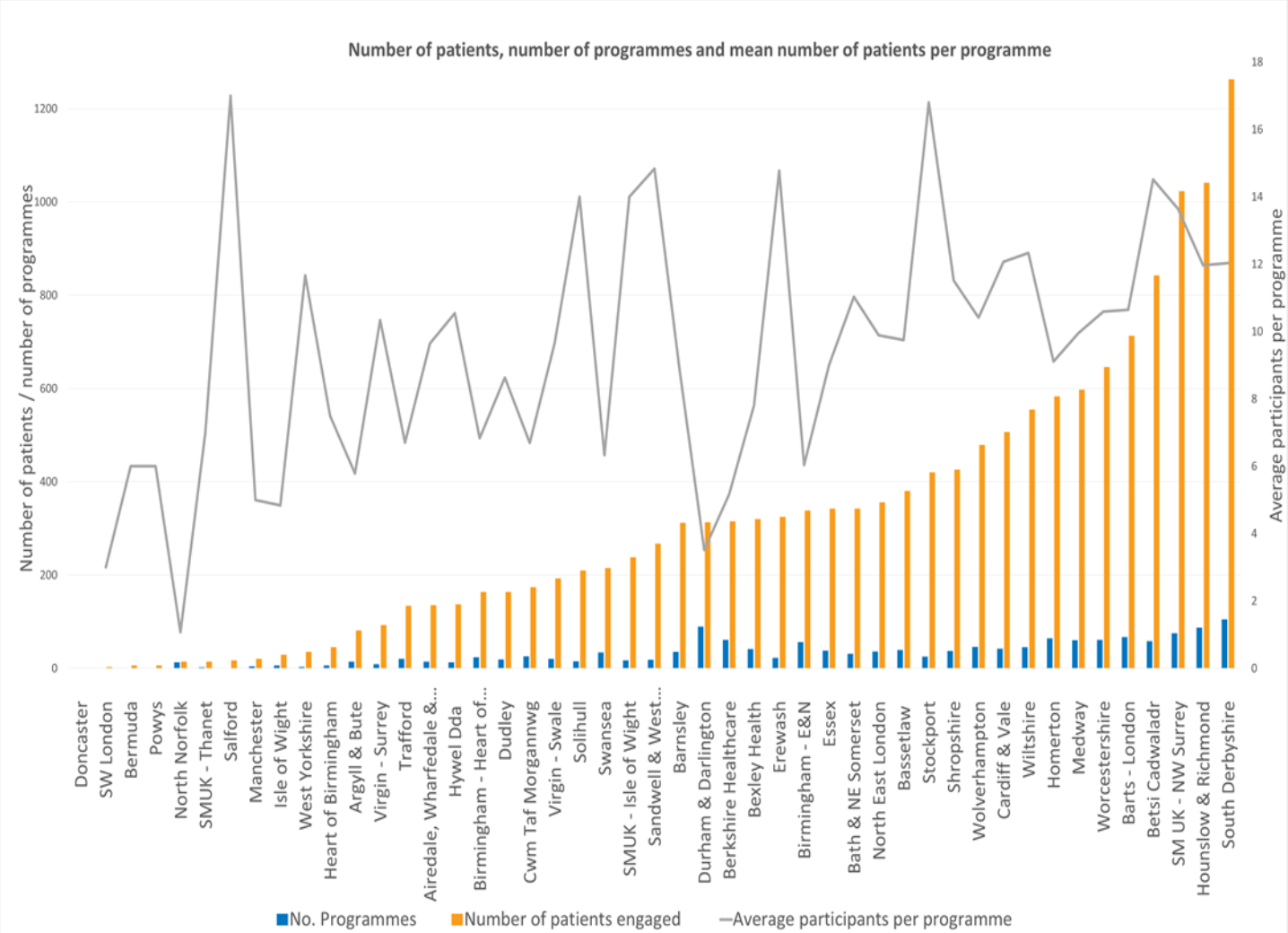
BIRMINGHAM - HEART OF ENGLAND	University Hospitals Birmingham NHS - Heart of England
BLACKTHORN TRUST	Blackthorn Trust
BURY	Pennine Care NHS Foundation Trust - Bury
CARDIFF & VALE	Cardiff & Vale University Health Board
CHANGING HEALTH	Changing Health
CRAWLEY	
CWM TAF MORGANNWG	Cwm Taf Morgannwg University Health Board
DONCASTER	
DUDLEY	Dudley Group NHS Foundation Trust
DURHAM & DARLINGTON	Durham & Darlington NHS FT
EREWASH	Derbyshire Community Health Services - Erewash CCG
ESSEX	Essex Partnership University NHS Foundation Trust
FRANK KUHNE	Frank Kuhne
GLORIA SIMON	Gloria Simon
HEART OF BIRMINGHAM	Birmingham Community Healthcare - Heart of Birmingham
HELEN CHAUHAN	Helen Chauhan
HOMERTON	Homerton University Hospital Trust
HOUNSLOW & RICHMOND	HRCH NHS Trust
HYWEL DDA	Hywel Dda University Health Board
ISLE OF WIGHT	Isle of Wight NHS Trust
KIRKLEES	Kirklees Council
MANCHESTER	Manchester NHS FT
MEDWAY	Medway Community Healthcare
NORTH EAST LONDON	North East London Foundation Trust
NORTH NORFOLK	ICS - North Norfolk
NORTHUMBRIA	Northumbria evaluation
OAK GLEN	Oak Glen
POWYS	Powys Teaching Health Board
SALFORD	Salford Royal NHS Foundation Trust
SANDWELL & WEST BIRMINGHAM	Sandwell & West Birmingham Hospital NHS Trust
SHROPSHIRE	Shropshire Community Health NHS Trust
SM UK - NW SURREY	Self Management UK - North West Surrey CCG
SM UK - ISLE OF WIGHT	Self Management UK - Isle of Wight CCG
SM UK - THANET	Self Management UK - Thanet CCG
SOLIHULL	University Hospitals Birmingham NHS - Solihull
STOCKPORT	Stockport NHS
STOKE	Stoke-on-Trent City Council
SOUTH DERBYSHIRE	Derbyshire Community Health Services NHS Trust
SW LONDON	South West London Partnership
SWANSEA	Swansea Bay University Health Board
TRAFFORD	Pennine Care NHS Foundation Trust - Trafford Division
VIRGIN - BATH & NE SOMERSET	Virgin Care - Bath & North East Somerset Community Health & Care Services
VIRGIN - SURREY	Virgin Care - Surrey Health
VIRGIN - SWALE	Virgin Care - Swale CCG
WEST YORKSHIRE	X-PERT Health
WILTSHIRE	Wiltshire Health and Care
WOLVERHAMPTON	Wolverhampton Wanderers Foundation
WORCESTERSHIRE	Worcestershire Acute Hospitals NHS Trust

X-PERT Diabetes - The best participant experience

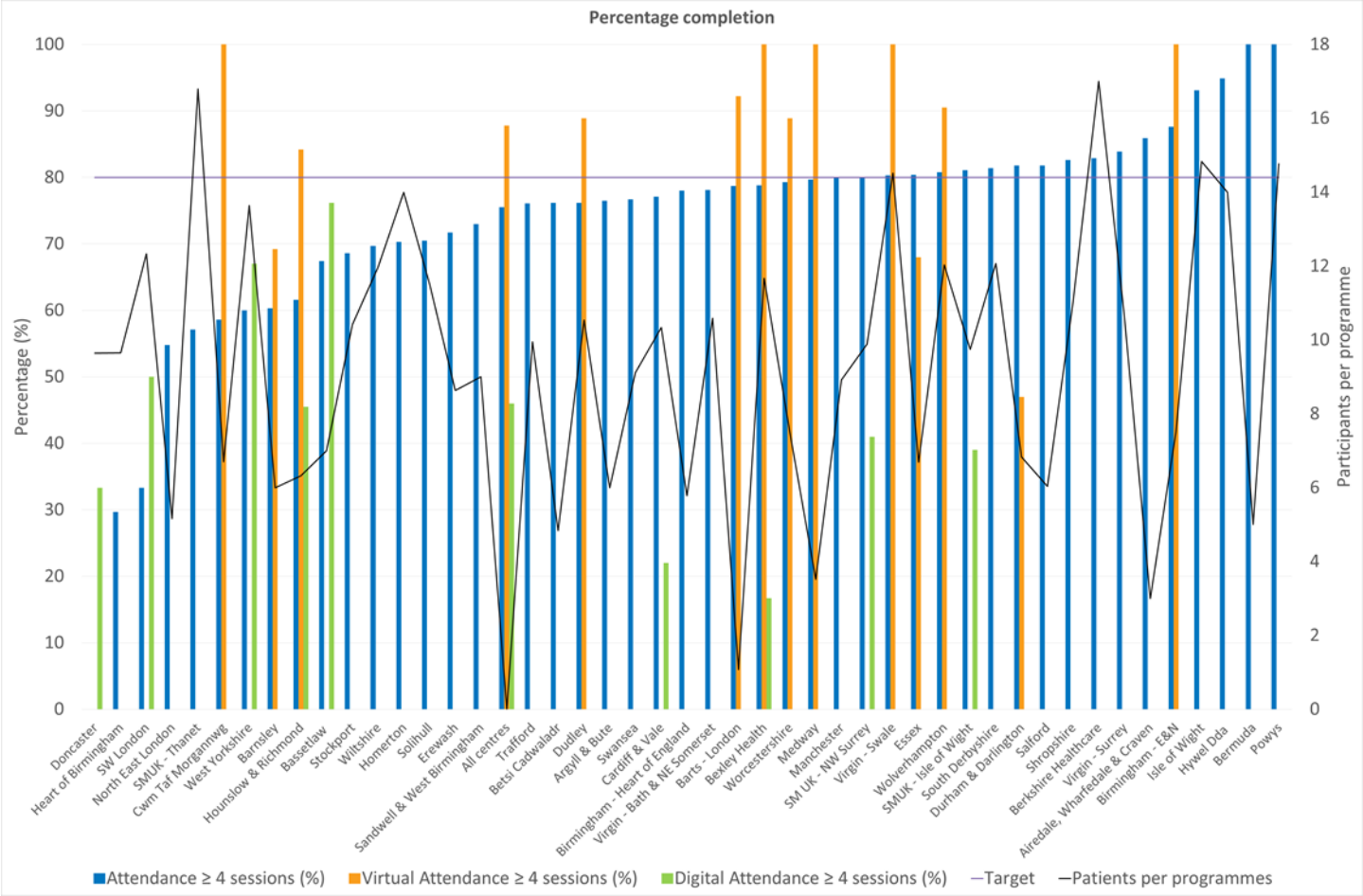
This award looked at the following criteria: number of programmes delivered; number of participants per session; uptake (% attending at least one session); attendance (% attending four or more sessions); participant empowerment change and participant satisfaction. It also takes into account the means of delivery i.e. face-to-face group-based, virtual group-based or the self-directed digital programme but organisations will not be marked down if they have not provided this information.

No. of participants, no. of programmes and mean no. of participants per programme

The graph below presents the number of participants per organisation who have attended the X-PERT Programme between 1st January 2019 and 31st December 2020. In total 1,501 X-PERT Programmes were delivered with 14,826 participants attending one session. South Derbyshire delivered the most programmes (n-105) to 1,263 participants with a mean of 12 participants per programme. Hounslow & Richmond and SM UK - NW Surrey had the second and third highest attendee numbers respectively. Salford and Stockport achieved the greatest mean number of participants per programme (17) participants.



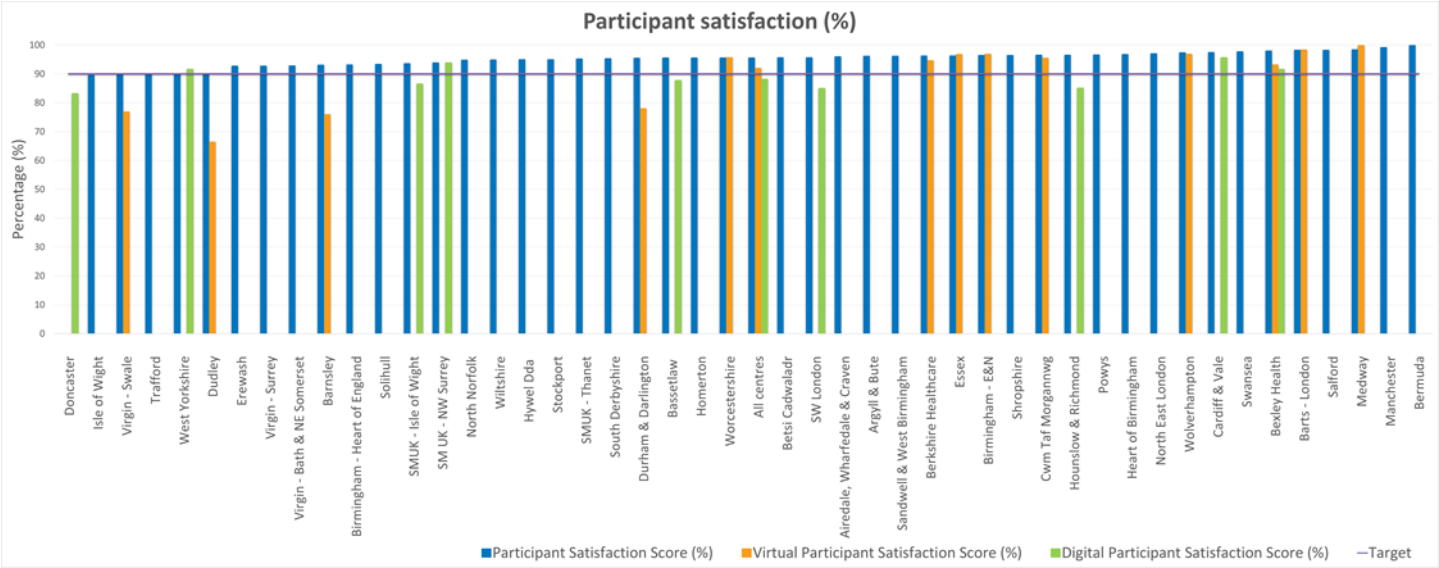
Participant attendance



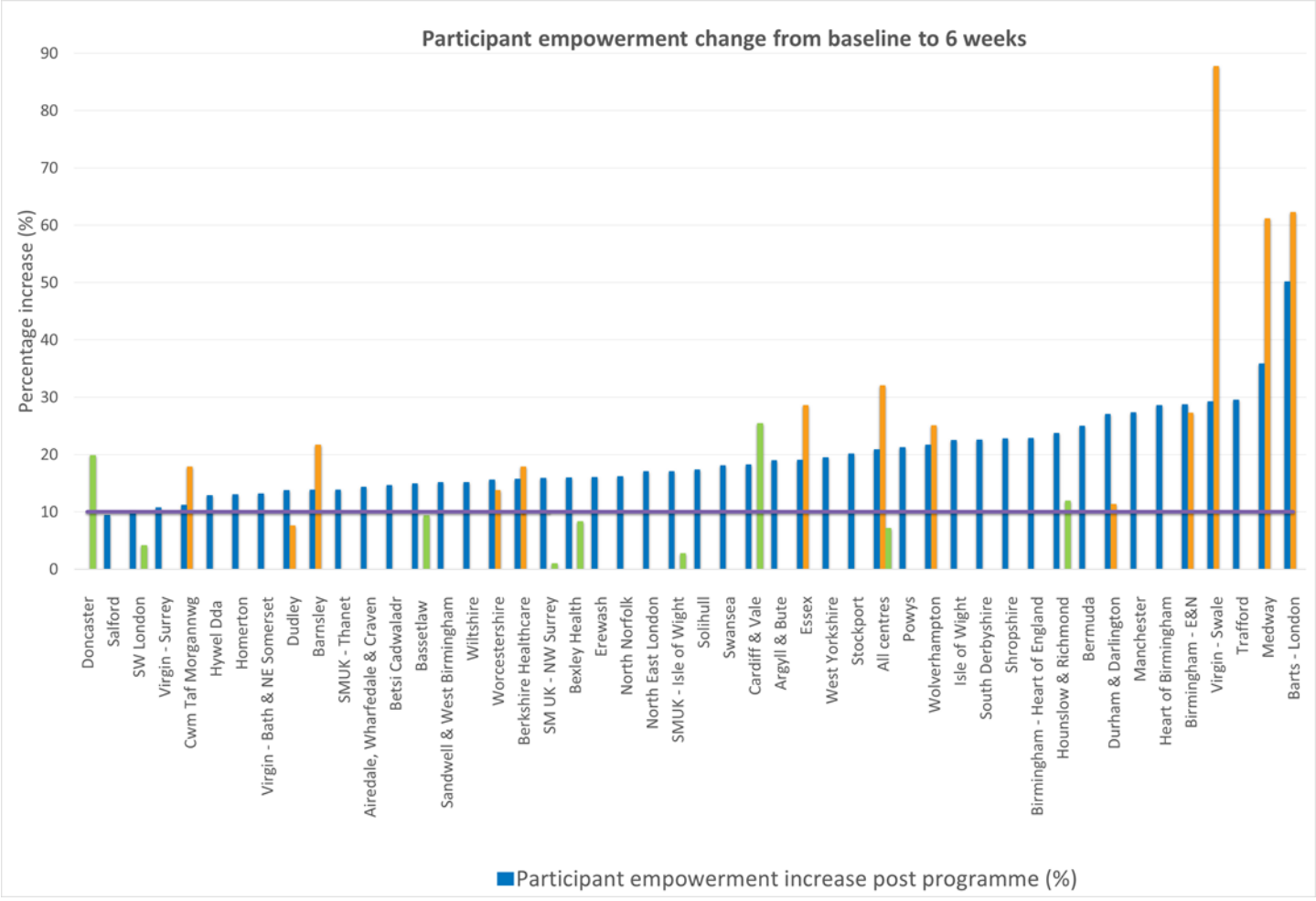
The mean *all centre* attendance score (percentage of X-PERT participants who attended four or more sessions) was 76% for the face-to-face (F2F) group programmes, 88% for the virtual group delivery and 46% for the self-directed digital programme. The audit standard derived from the clinical trial was 80% (purple line in the graph above) however, during these challenging times with the COVID-19 pandemic, it is not surprising that attendance falls slightly below the audit standard. It is interesting to see that the virtual group-based sessions (orange line) achieved excellent attendance rates. It is no surprise that the attendance rate for the digital programme is much lower as it was only launched in April 2020 and participants have a lifetime membership, which means that they can progress through the programme at their own pace. Forty-nine organisations reported attendance and 19 organisations (40%) obtained a mean attendance score equal to or above the audit standard.

Participant satisfaction & empowerment

Participants complete an evaluation questionnaire in Session 6 of the X-PERT Programme, and a validated empowerment questionnaire in Sessions One and 6. Mean scores for satisfaction and empowerment are calculated per programme and entered onto the audit database.



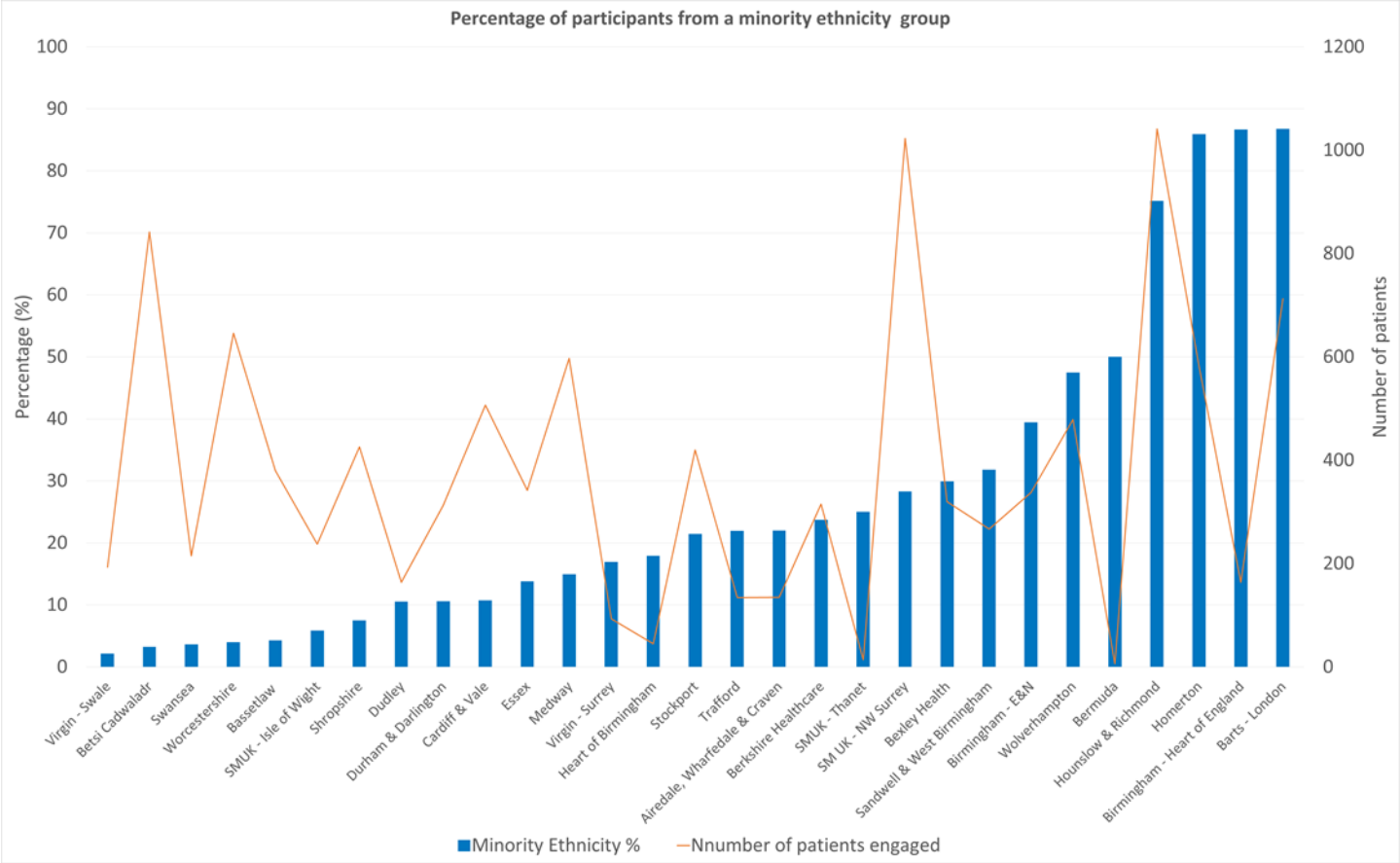
At 6 weeks the mean *all centre* X-PERT participant satisfaction score is 96% for F2F group programmes (blue line), 92% for the virtual group programmes (orange line) and 88% for the digital programme (green line) demonstrating very high satisfaction with the programmes. However, some organisations reported a much lower score for the virtually-delivered programme and this should be explored to ascertain the reasons why this is the case. The audit standard is 90% (purple line in the graph above). Forty-eight organisations (100%) achieved the audit standard for the F2F programmes.



The clinical trial demonstrated a 24% increase in participant empowerment at 6 weeks; the *all centres mean* in the audit for the F2F group programmes is +21%. The audit standard for implementation has been set at 10% (see purple line above). Fifty-eight organisations (100%) achieved or exceeded the audit standard for empowerment. Although it appears that people find the virtually-delivered group programmes more empowering, it seems that early data from some of the organisations that are using the digital programme, indicates it could less empowering. However, it is very early days for the digital programme and we will continue to monitor this closely.

Ethnicity

Organisations are invited to record ethnicity of participants. The following graph presents the percentage of participants from minority ethnic groups in the organisations that have entered this information. 87% of the 713 patients attending at Barts – London; 87% of 164 patients at Birmingham - Heart of England; 86% of the 583 patients at Homerton and 75% of the 1041 patients at Hounslow & Richmond have been from minority ethnic groups, demonstrating that in some areas, X-PERT is being delivered to a diverse population.

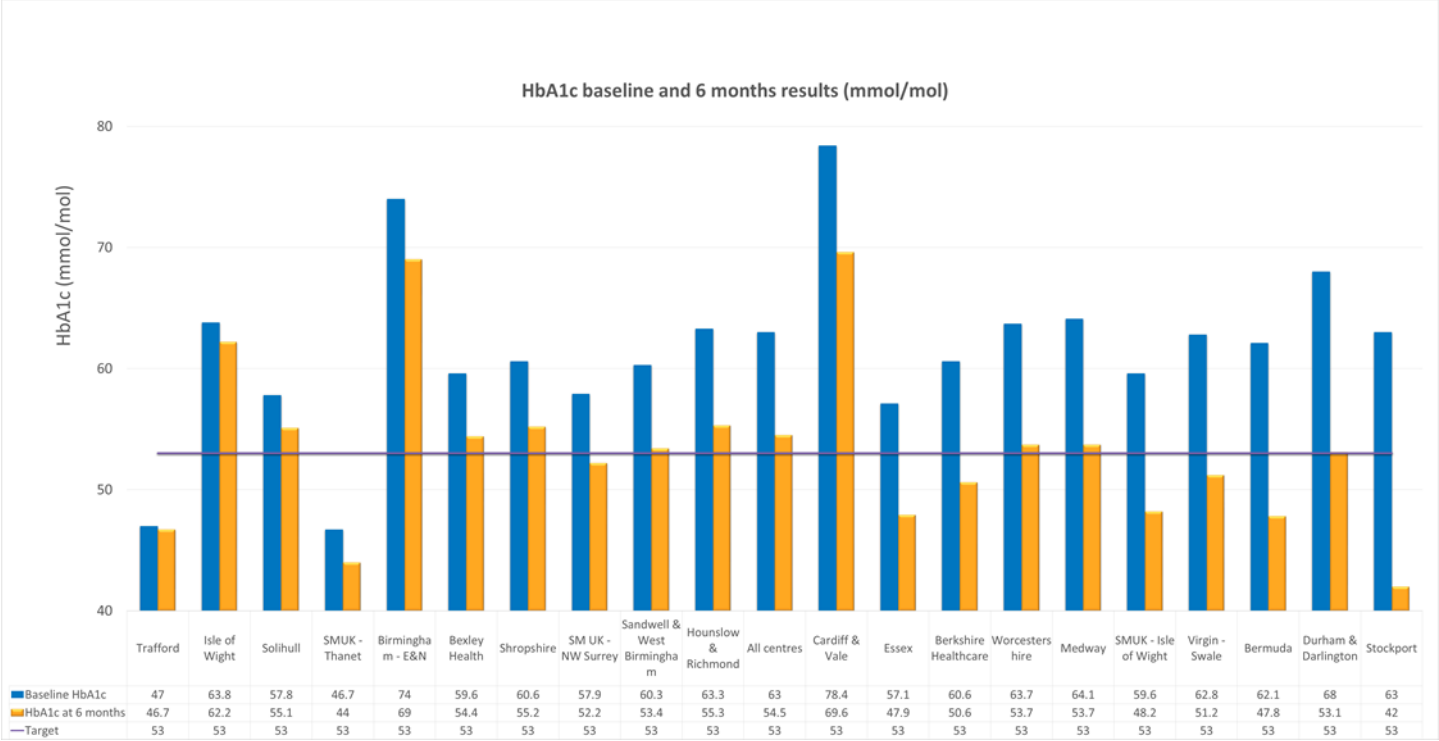


Taking all these criteria into account, the best participant experience award goes to South Derbyshire who had an uptake of 91% and delivered 105 programmes to 1,263 participants with a mean of 12 participants per programme with 81% completion, 95% participant satisfaction and 23% increased empowerment. Self Management UK NW Surrey have been awarded 2nd place. They had an 81% uptake and delivered 75 programmes to 1023 participants with a mean 14 participants per programme, with 94% satisfaction, 80% completion and 16% increased empowerment. Joint 3rd place has been awarded to Birmingham E&N, who had an uptake of 64% and delivered 56 programmes to 1023 participants (39% from minority ethnic backgrounds) with 88% completion, 29% increase in participant empowerment and 97% participant satisfaction but only a mean 6 participants per programme and Barts – London who achieved a 59% uptake and delivered 67 programmes to 713 participants (mean number per programme 11) of whom 87% were from minority ethnic groups with 79% completion, 98% satisfaction and 50% increased empowerment score.

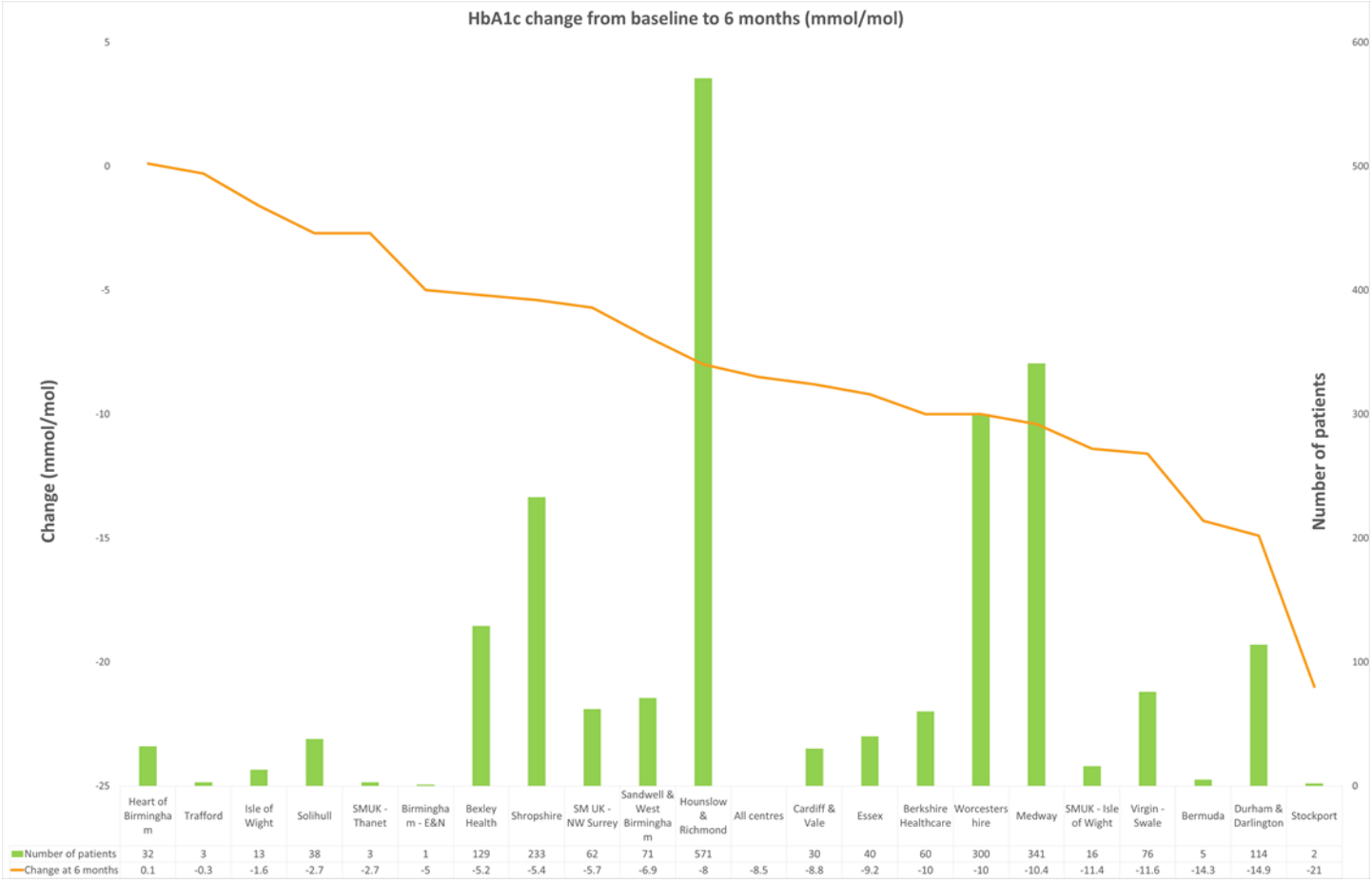
Greatest improvement in glycated haemoglobin (HbA1c)

To be considered for an award the following criteria were taken into consideration: HbA1c reduction at both 6 and 12 months; number of participants for whom matched data had been entered; percentage of attendees that had matched data, robust 6 and 12 months 95% confidence intervals.

The first graphs presents mean baseline and 6 month HbA1c results per organisation and the second graph presents the change in HbA1c over this time point along with the number of patients who have matched data.



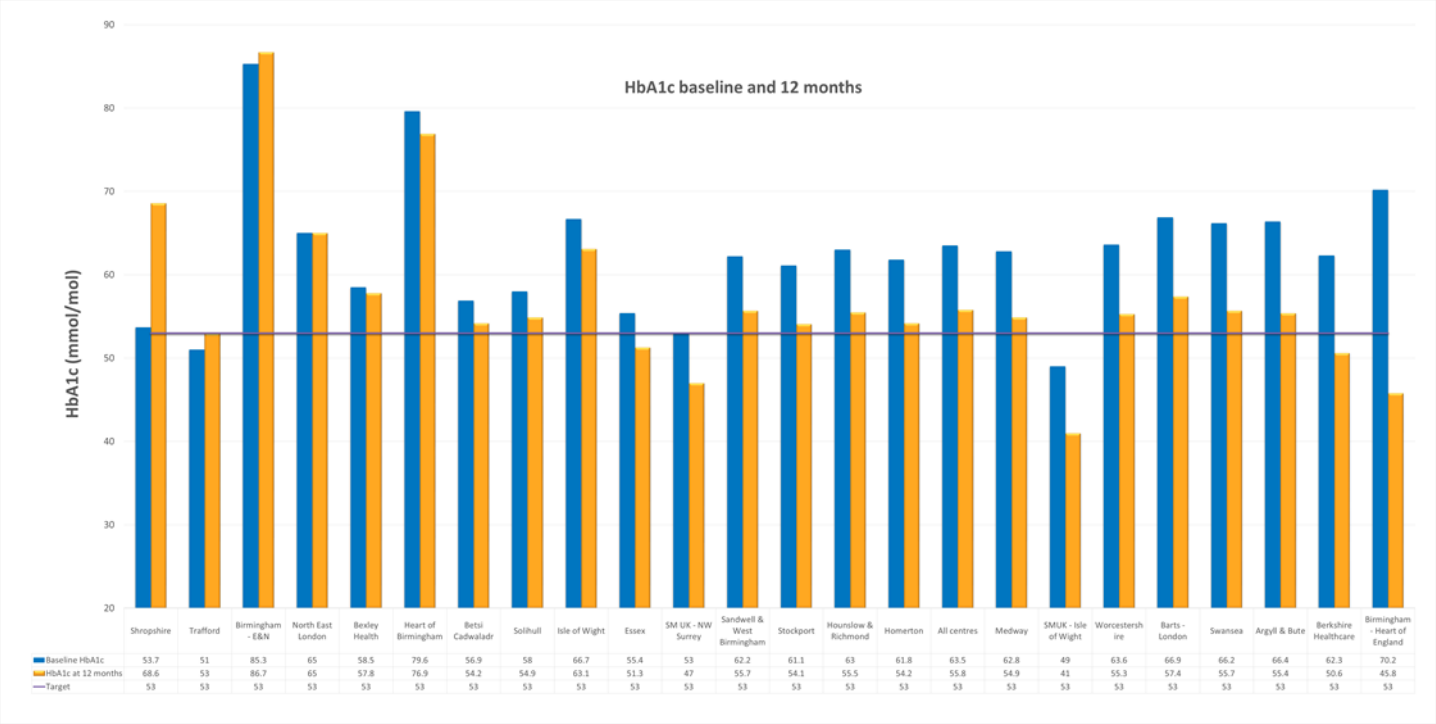
	Trafford	Isle of Wight	Solihull	SMUK - Thanet	Birmingham - E&N	Bexley Health	Shropshire	SM UK - NW Surrey	Sandwell & West Birmingham	Hounslow & Richmond	All centres	Cardiff & Vale	Essex	Berkshire Healthcare	Worcestershire	Medway	SMUK - Isle of Wight	Virgin - Swale	Bermuda	Durham & Darlington	Stockport
Baseline HbA1c	47	63.8	57.8	46.7	74	59.6	60.6	57.9	60.3	63.3	63	78.4	57.1	60.6	63.7	64.1	59.6	62.8	62.1	68	63
HbA1c at 6 months	46.7	62.2	55.1	44	69	54.4	55.2	52.2	53.4	55.3	54.5	69.6	47.9	50.6	53.7	53.7	48.2	51.2	47.8	53.1	42
Target	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53

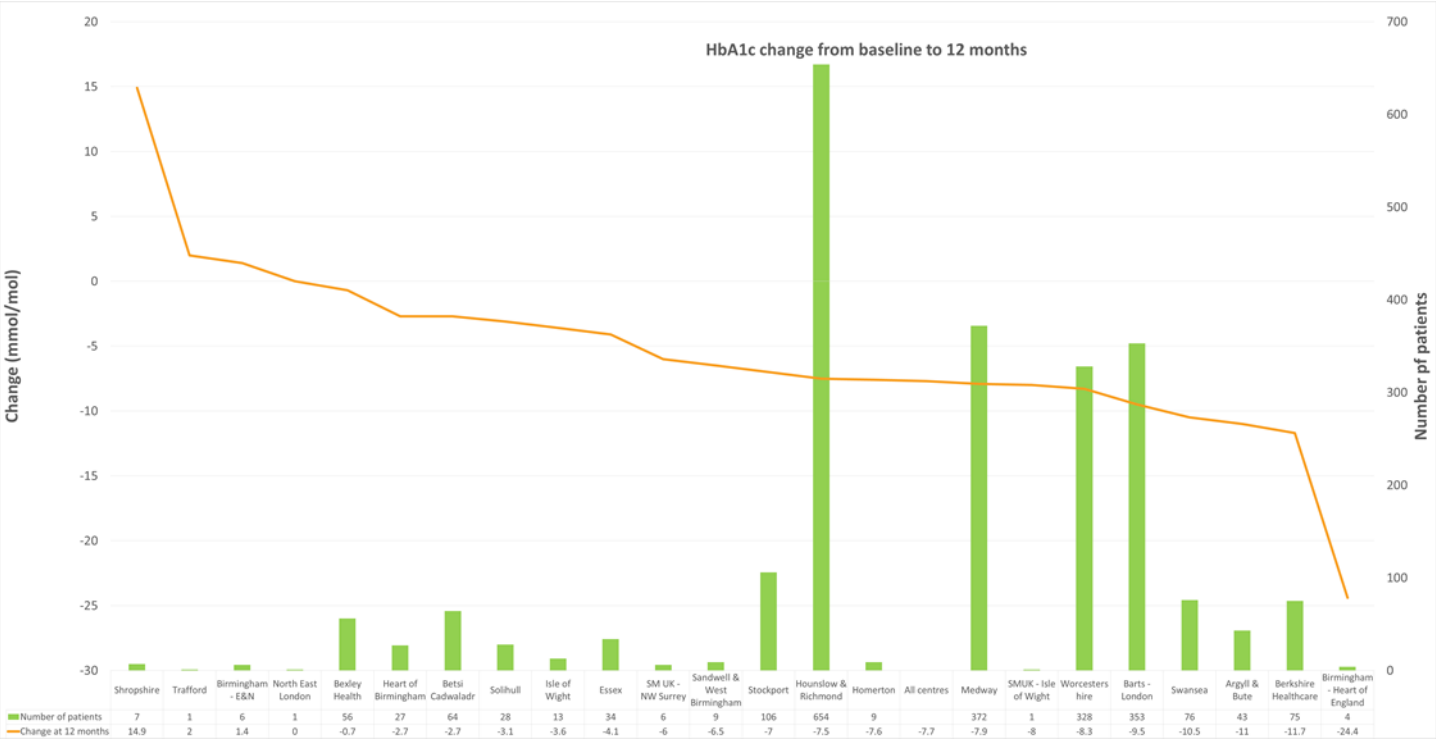


At 6 months the mean *all centre* reduction in glycated haemoglobin for X-PERT participants is 8.5 mmol/mol (95% CI: -8.4, -8.6), to 54.5 mmol/mol. The audit standard for both 6 and 12 months is an HbA1c value of ≤53mmol/mol (the purple line). Twenty organisations reported HbA1c at 6 months and 10 organisations (50%) achieved the audit standard for glycated haemoglobin ≤53mmol/mol. All 20 organisations demonstrated a mean reduction in HbA1c.

Although Stockport reported the greatest reduction in HbA1c (-21 mmol/mol), this was only for two participants. The next greatest reduction came from Durham & Darlington who achieved a mean reduction of 14.9 mmol/mol for 114 participants. The most robust data came from Hounslow & Richmond who demonstrated a mean reduction of 8 mmol/mol for 571 participants.

The two graphs present the same information for 12 months but note that these will be a different set of patient matched records.





At 12 months the mean *all centre* reduction in glycated haemoglobin is 7.7 mmol/mol reduction, to 55.8 mmol/mol (95% CI: -7.8, -7.6). The clinical trial also demonstrated a 7.7 mmol/mol at 12 months. Twenty-three organisations reported HbA1c at 12 months, 19 (83%) of which demonstrated a mean reduction in HbA1c. Six organisations (26%) met the audit standard of ≤53 mmol/mol at 12 months, this is less than the previous year when 48% achieved the audit standard and could reflect the general deterioration in glycaemic control due to COVID-19 and lockdowns.

Birmingham - Heart of England achieved the best results with a mean -24.4 mmol/mol reduction but only had 4 patient matched records; Berkshire Healthcare achieved a -11.7 mmol/mol for 75 patients; Argyll & Bute achieved a mean -11 mmol/mol for 43 patients; Swansea achieved a -10.5 mmol/mol reduction for 76 patients; and Barts – London, a -9.5 mmol/mol reduction for 353 patients.

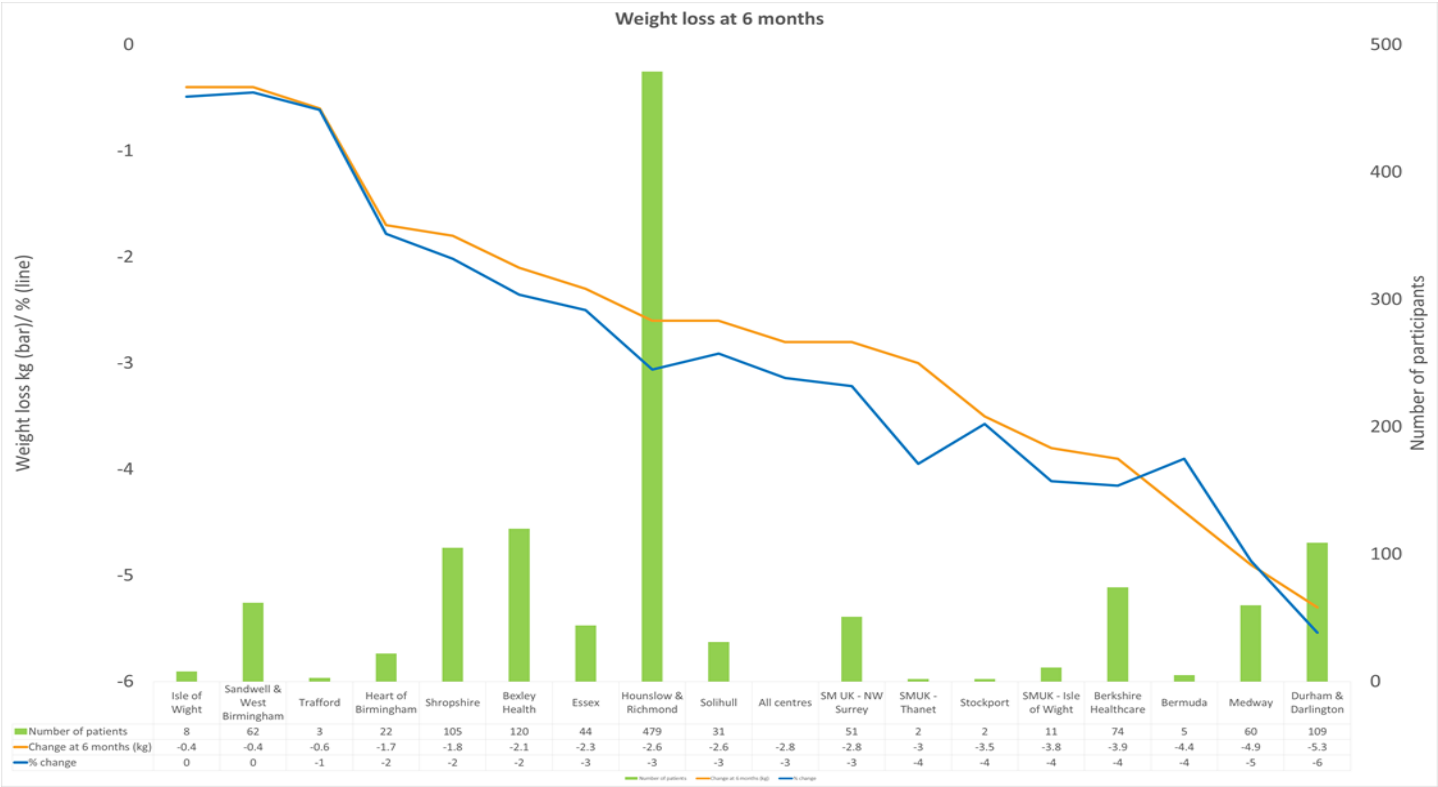
Considering both the 6 and 12 month data, Worcestershire and Medway are joint winners. Worcestershire achieved a 10 mmol/mol reduction at 6 months (300 matched data sets) and 8.3 mmol/mol reduction at 12 months (328 matched data sets). Medway achieved a mean 10.4 mmol/mol reduction at 6 months (341 matched data sets) and a 7.9 mmol/mol reduction at 12 months (372 matched data sets). In second place is Hounslow & Richmond who achieved a mean 8 mmol/mol reduction at 6 months (571 matched data sets) and a 7.5 mmol/mol mean reduction at 12 months(654 matched data sets). In third place, Berkshire Healthcare achieved a mean 10 mmol/mol reduction (60 patients) at 6 months and -11.7 mmol/mol (75 patients) at 12 months.

Highly commended: Durham & Darlington for 6 month achievements and Barts – London, Swansea and Argyll & Bute for 12 month achievements.

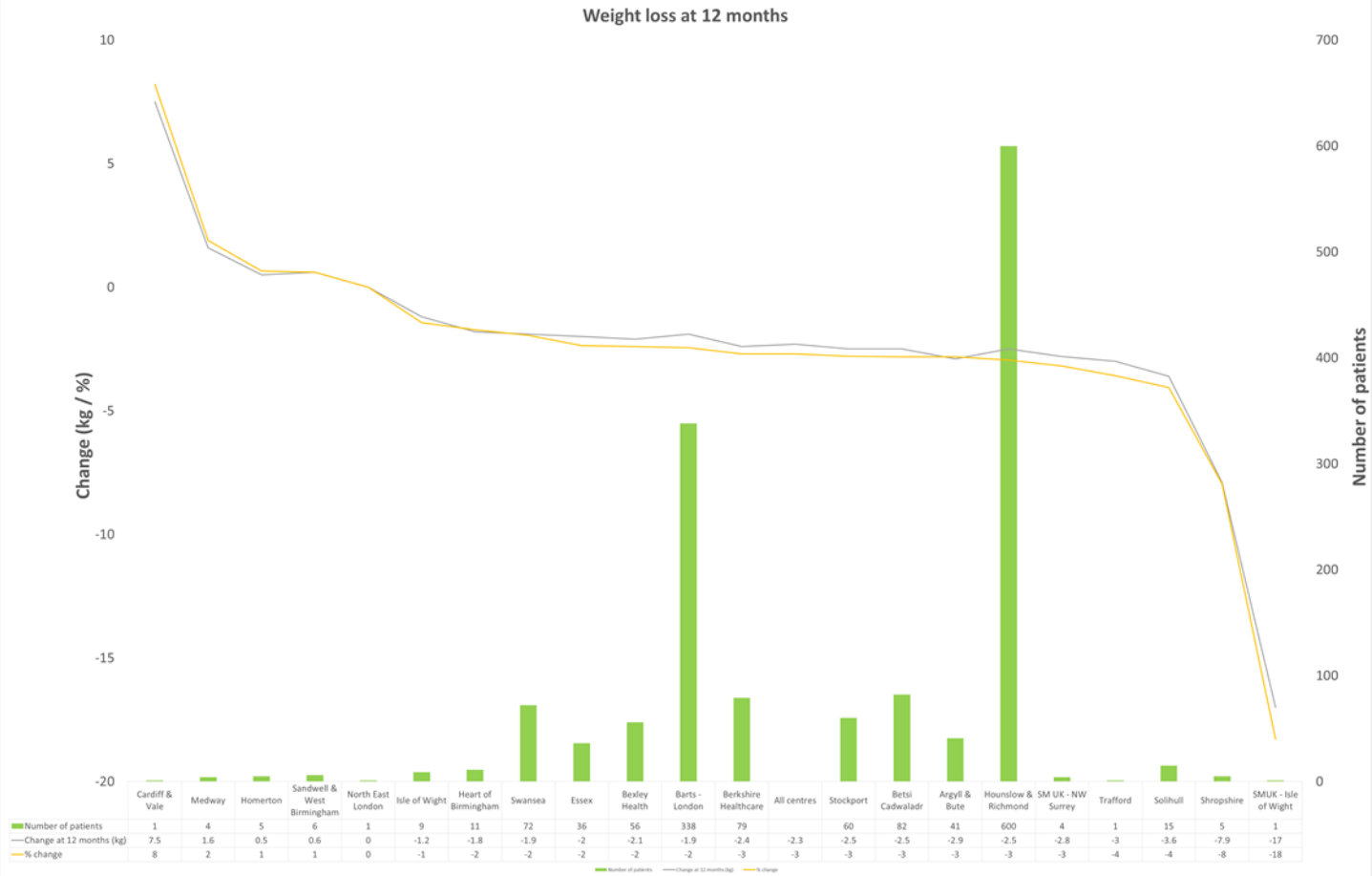
The largest impact on body weight and waist circumference

For the anthropometric award category, the following criteria were taken into consideration: body weight and waist circumference reduction at 6 and 12 months. For all timelines, the number of participants for whom matched data was available and the total number of participants were taken into consideration.

Body weight



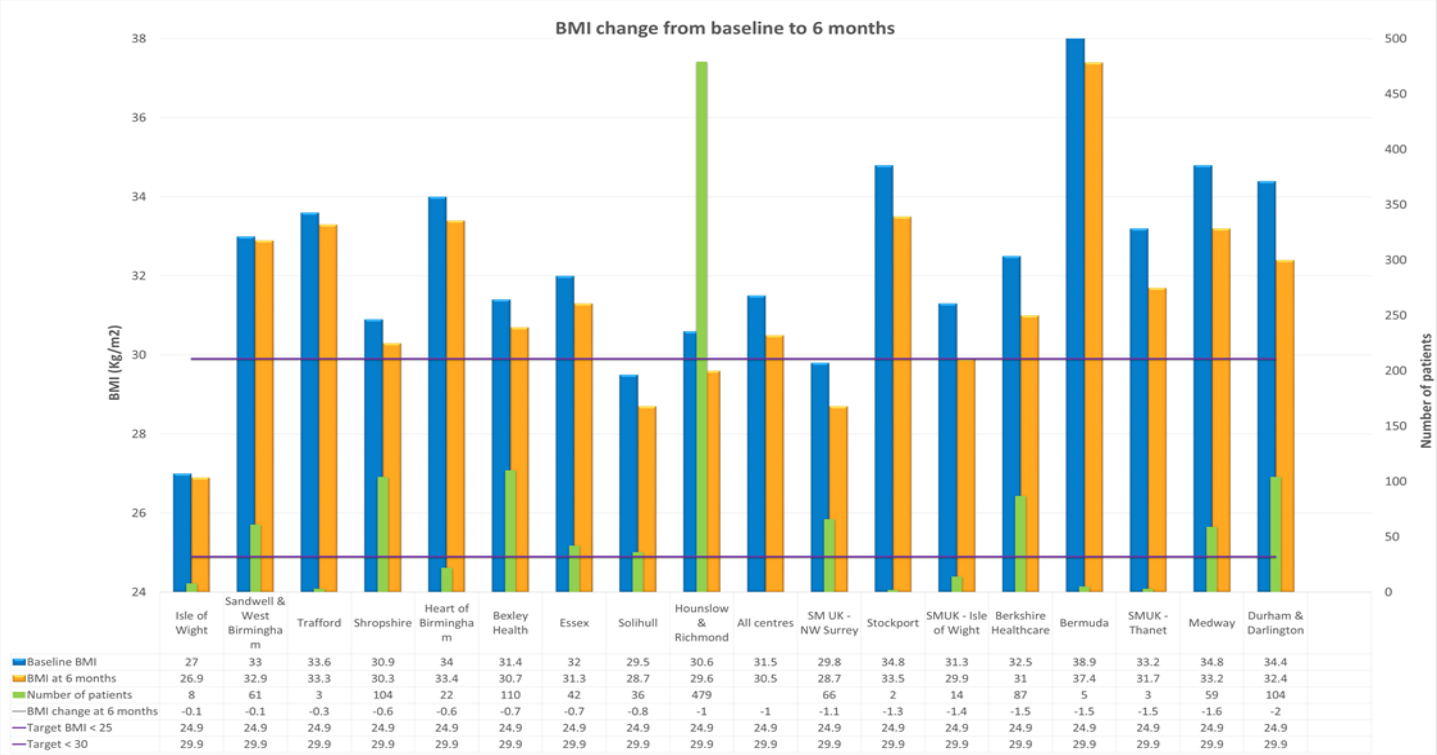
At 6 months the mean *all centre* reduction in body weight for X-PERT participants was 2.8kg (95% CI: -3.0, -2.6) from 89.2kg to 86.4kg; a 3% weight loss. Seventeen organisations entered data for weight at 6 months and all of these organisations (100%) documented a mean weight loss between 0.4kg and 5.3kg. The percentage change from baseline was between 0% and -6%. Durham & Darlington achieved the best results at 6 months with a mean weight loss of 5.3kg for 109 participants.



At 12 months the mean *all centre* reduction in body weight for X-PERT participants was 2.3kg (95% CI: -2.5, -2.1) from 85.3kg to 83kg. Twenty-one organisations entered data for weight at 12 months, and 16 (76%) demonstrated a mean weight reduction between 1.2kg and 17kg (1 to-18%). SM UK – Isle of Wight achieved the best results at 12 months with a weight loss of 17kg but only for 1 participant. Solihull achieved a mean weight loss of 3.6kg for 15 participants and Hounslow & Richmond achieved a mean weight loss of 2.5kg for 600 participants.

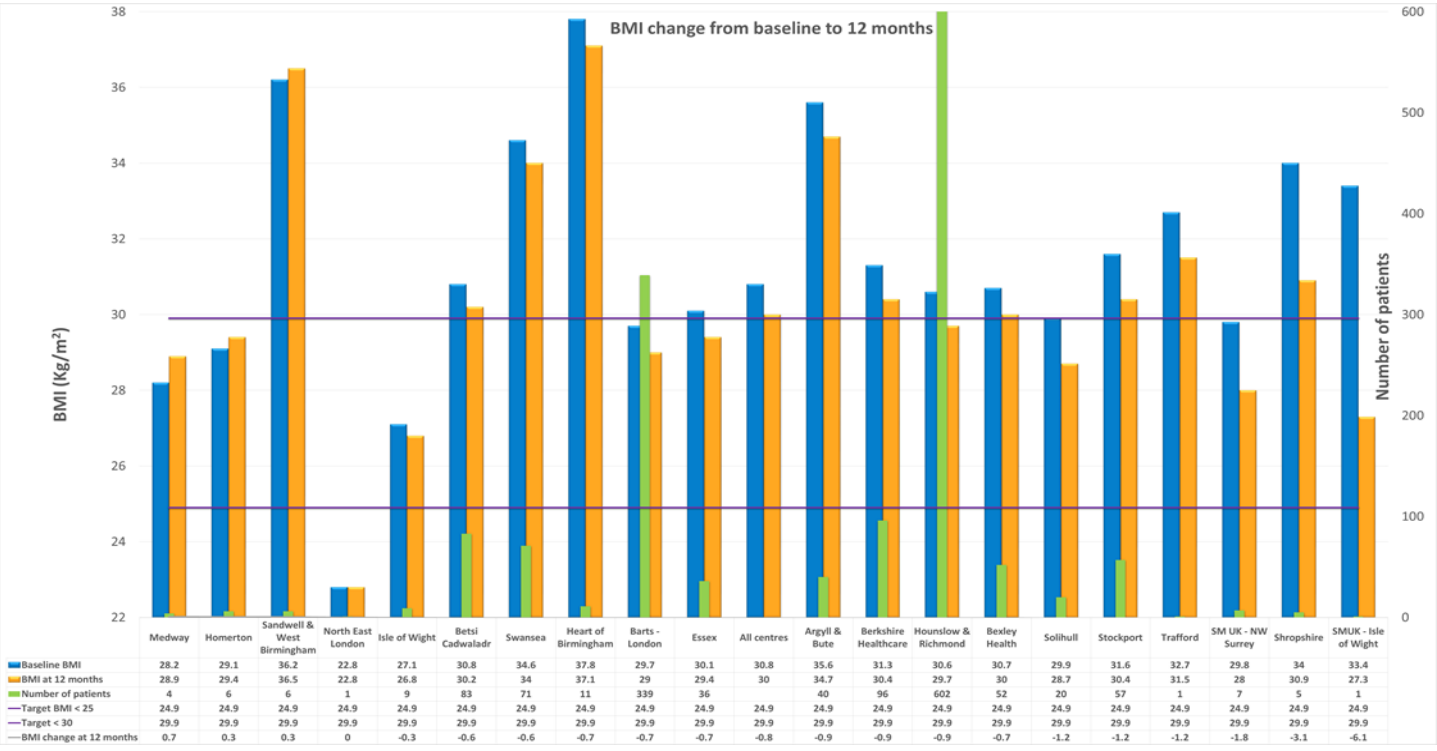
Body Mass Index (BMI)

At 6 months the mean *all centre* reduction in BMI for X-PERT participants was 1.0 kg/m² (95% CI: -1.1, -0.9), from 31.5 kg/m² to 30.5 kg/m². The target lines of BMI <30 kg/m² and BMI <25 kg/m² have been inserted into the graph below for reference. Seventeen organisations entered BMI data at 6 months. All organisations (100%) demonstrated a mean reduction in BMI. Durham & Darlington achieved the greatest mean reduction, of -2 kg/m² for 104 participant matched data sets.



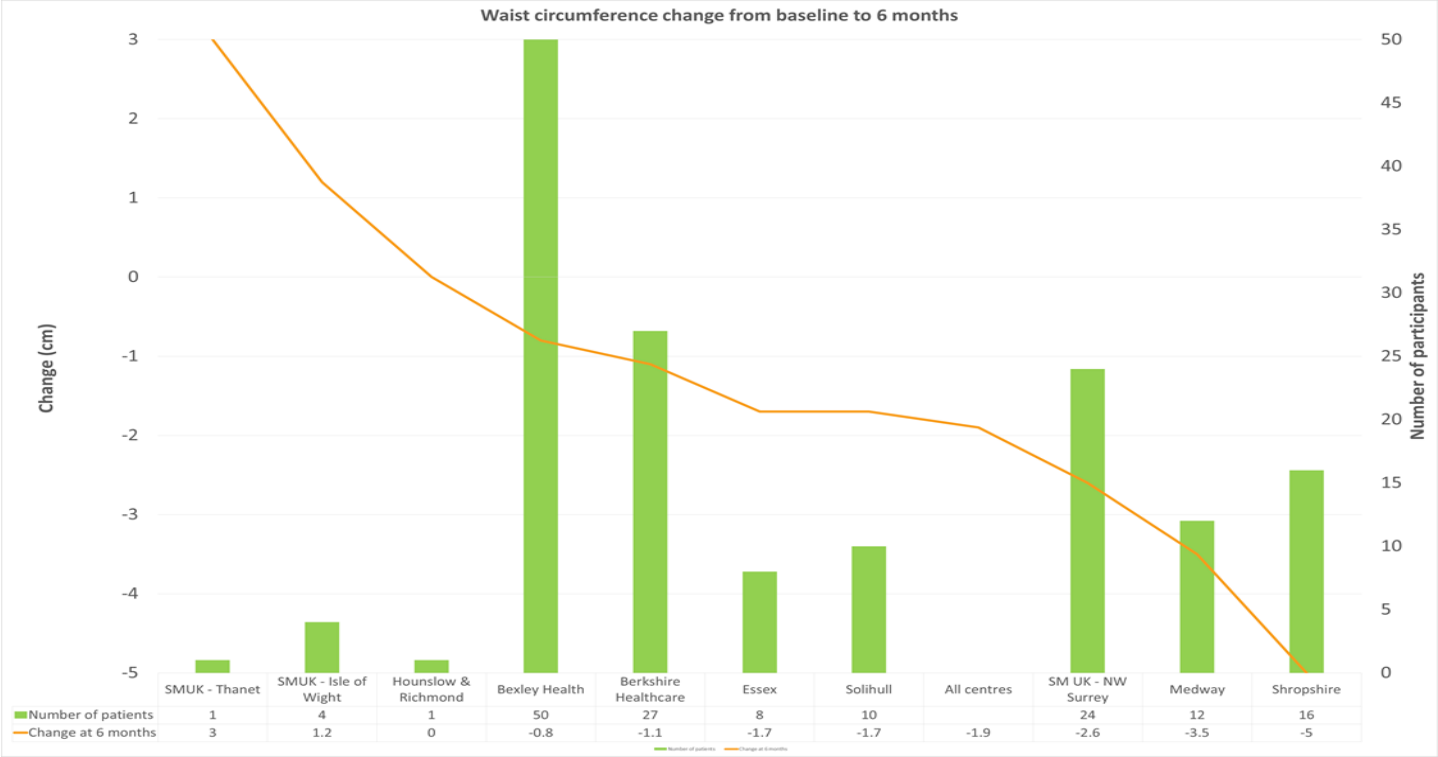
	Isle of Wight	Sandwell & West Birmingham	Trafford	Shropshire	Heart of Birmingham	Bexley Health	Essex	Solihull	Hounslow & Richmond	All centres	SM UK - NW Surrey	Stockport	SMUK - Isle of Wight	Berkshire Healthcare	Bermuda	SMUK - Thanet	Medway	Durham & Darlington
Baseline BMI	27	33	33.6	30.9	34	31.4	32	29.5	30.6	31.5	29.8	34.8	31.3	32.5	38.9	33.2	34.8	34.4
BMI at 6 months	26.9	32.9	33.3	30.3	33.4	30.7	31.3	28.7	29.6	30.5	28.7	33.5	29.9	31	37.4	31.7	33.2	32.4
Number of patients	8	61	3	104	22	110	42	36	479		66	2	14	87	5	3	59	104
BMI change at 6 months	-0.1	-0.1	-0.3	-0.6	-0.6	-0.7	-0.7	-0.8	-1	-1	-1.1	-1.3	-1.4	-1.5	-1.5	-1.5	-1.6	-2
Target BMI < 25	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
Target < 30	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9

At 12 months the mean *all centre* reduction in BMI for X-PERT participants was 0.8 kg/m² (95% CI: -0.9, -0.7), from 30.8 kg/m² to 30.0 kg/m². Twenty organisations entered BMI data at 12 months. Of these, 13 (59%) had baseline mean BMI values in the obese range (≥30 kg/m²). Sixteen organisations (80%) demonstrated a mean reduction in BMI. Although SM UK (Isle of Wight and NW Surrey) and Shropshire obtained the best results, these were only for between 1-7 matched participant data sets. Hounslow & Richmond, Berkshire Healthcare, Bexley Health and Stockport obtained more robust dataset for between 52 – 602 participants of -0.9 to -1.2 kg/m².

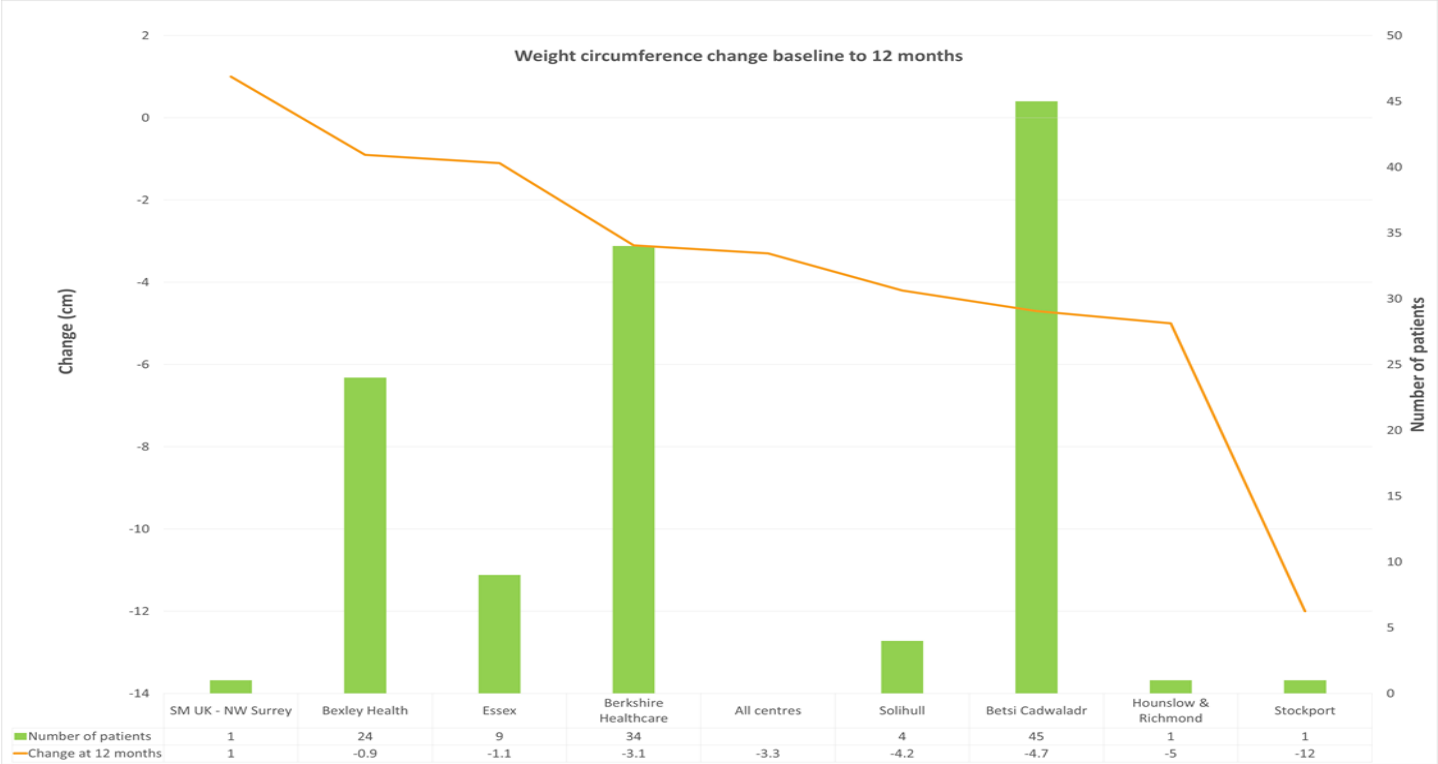


	Medway	Homerton	Sandwell & West Birmingham	North East London	Isle of Wight	Betsi Cadwaladr	Swansea	Heart of Birmingham	Barts - London	Essex	All centres	Argyll & Bute	Berkshire Healthcare	Hounslow & Richmond	Bexley Health	Solihull	Stockport	Trafford	SM UK - NW Surrey	Shropshire	SMUK - Isle of Wight
Baseline BMI	28.2	29.1	36.2	22.8	27.1	30.8	34.6	37.8	29.7	30.1	30.8	35.6	31.3	30.6	30.7	29.9	31.6	32.7	29.8	34	33.4
BMI at 12 months	28.9	29.4	36.5	22.8	26.8	30.2	34	37.1	29	29.4	30	34.7	30.4	29.7	30	28.7	30.4	31.5	28	30.9	27.3
Number of patients	4	6	6	1	9	83	71	11	339	36		40	96	602	52	20	57	1	7	5	1
Target BMI < 25	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
Target < 30	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9
BMI change at 12 months	0.7	0.3	0.3	0	-0.3	-0.6	-0.6	-0.7	-0.7	-0.7	-0.8	-0.9	-0.9	-0.9	-0.7	-1.2	-1.2	-1.2	-1.8	-3.1	-6.1

Waist circumference



At 6 months the mean *all centre* reduction in waist circumference for X-PERT participants was 1.9cm (95% CI: -2.2,-1.6), from 104.2cm to 102.3cm. Only 10 organisations entered waist circumference data at 6 months. Seven organisations (70%) demonstrated a mean reduction in waist circumference. Shropshire achieved the best results at 6 months, with a mean reduction of 5cm with 16 participants matched data sets.



At 12 months the mean *all centre* reduction in waist circumference for X-PERT participants was 3.3cm (95% CI: -3.7, -2.9) from 104.4cm to 101.1cm. Eight organisations reported waist circumference at 12 months and seven (88%) demonstrated a mean reduction. Although Stockport achieved the best results, this was only for one participant matched dataset. The greatest number of participant matched records was from Betsi Cadwaladr who achieved -4.7cm for 45 participants.

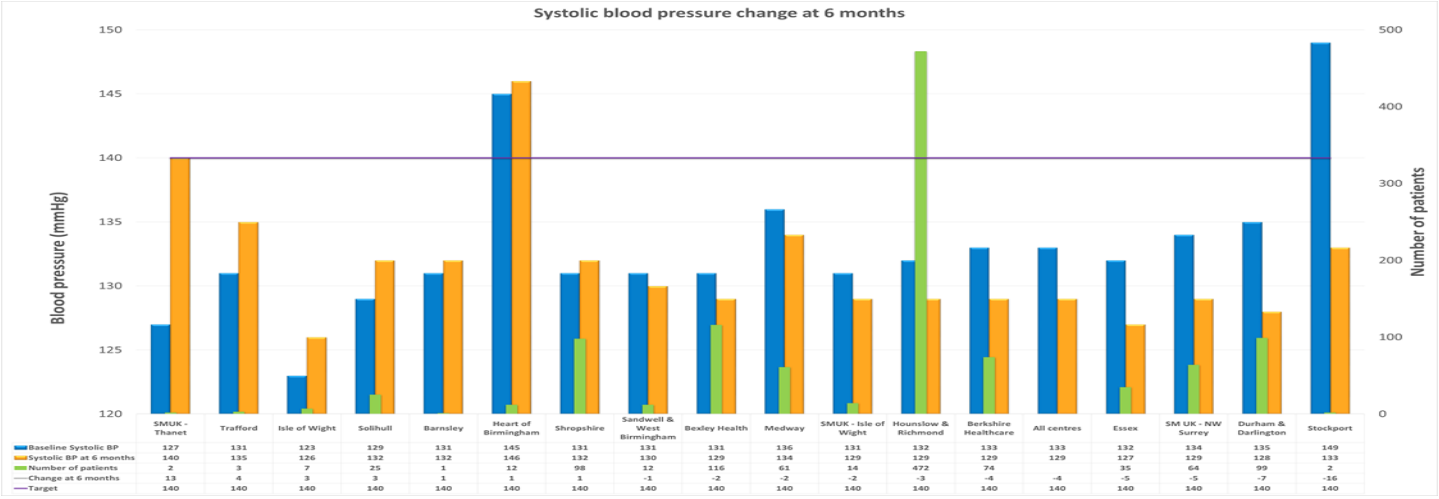
Overall: Taking all these criteria into account, the award goes to Berkshire Healthcare who achieved -3.9kg (4%), -1.5kg/m² BMI and -1.1cm waist circumferences at 6 months (27 to 87 matched data sets) and -2.4kg (3%), -0.9kg/m² and -3.1cm waist circumference at 12 months (34 to 96 data sets). Bexley Health achieved 2nd place with -2.1kg (2%), -0.7kg/m² BMI and -0.8cm waist circumferences at 6 months (50 to 120 data sets) and -2.1kg (2%), -0.7kg/m² and -0.9cm waist circumference at 12 months (24 to 56 data sets). Essex and Solihull achieved joint 3rd place. Essex for achieving 2.3kg (3%) weight, -0.7kg/m² BMI and -1.7cm waist circumferences at 6 months (8 to 44 data sets) and -2.0kg (2%), -0.7kg/m² and -1.1cm waist circumference at 12 months (4 to 20 data sets) and Solihull for achieving -2.6kg (-3%) weight, -0.8 kg/m² BMI, -0.7cm waist at 6 months (10 to 36 data sets) and -3.6kg weight, -1.2 kg/m² BMI and -4.2cm waist (4 to 20 data sets).

Highly commended: Hounslow & Richmond for weight and BMI improvements at 6 and 12 months (-2.6kg, -1.0 kg/m²) and 12 months (-2.5kg, -0.9 kg/m²) for 479, 600 patients respectively (but only 1 waist measurement reported). The following organisations highly commended for 6 month data: Durham & Darlington: -5.3kg [6%] and BMI (-2 kg/m²) (104, 109 data sets respectively, no waist data); NW Surrey -2.8kg (-3%) weight, -1.1 kg/m² BMI and -2.6cm waist (24 to 66 matched data sets); Medway -4.9kg (-5%), -1.6 kg/m² BMI and -3.5cm waist for 12 to 60 matched data sets; Shropshire -1.8kg weight, -0.6 BMI kg/m² and -5cm waist for 16 to 105 matched data sets).

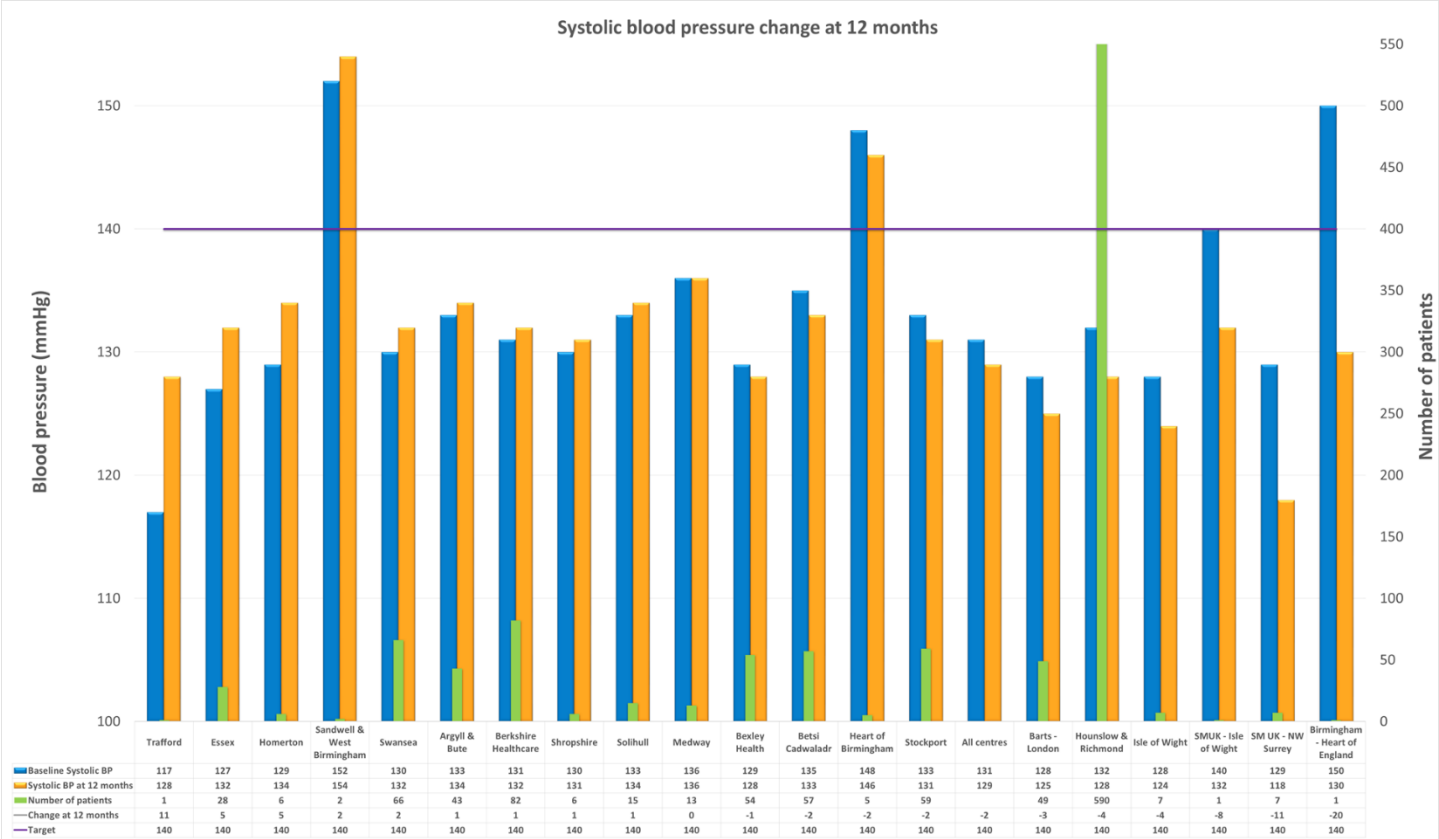
Cardiovascular disease (CVD) risk reduction

This award category considered the following criteria: reduction in systolic and diastolic blood pressure at 6 and 12 months; reduction in total cholesterol to HDL ratio; reduction in triglyceride to HDL ratio; number of participants for whom matched data was available; robust 95% confidence intervals.

Systolic blood pressure



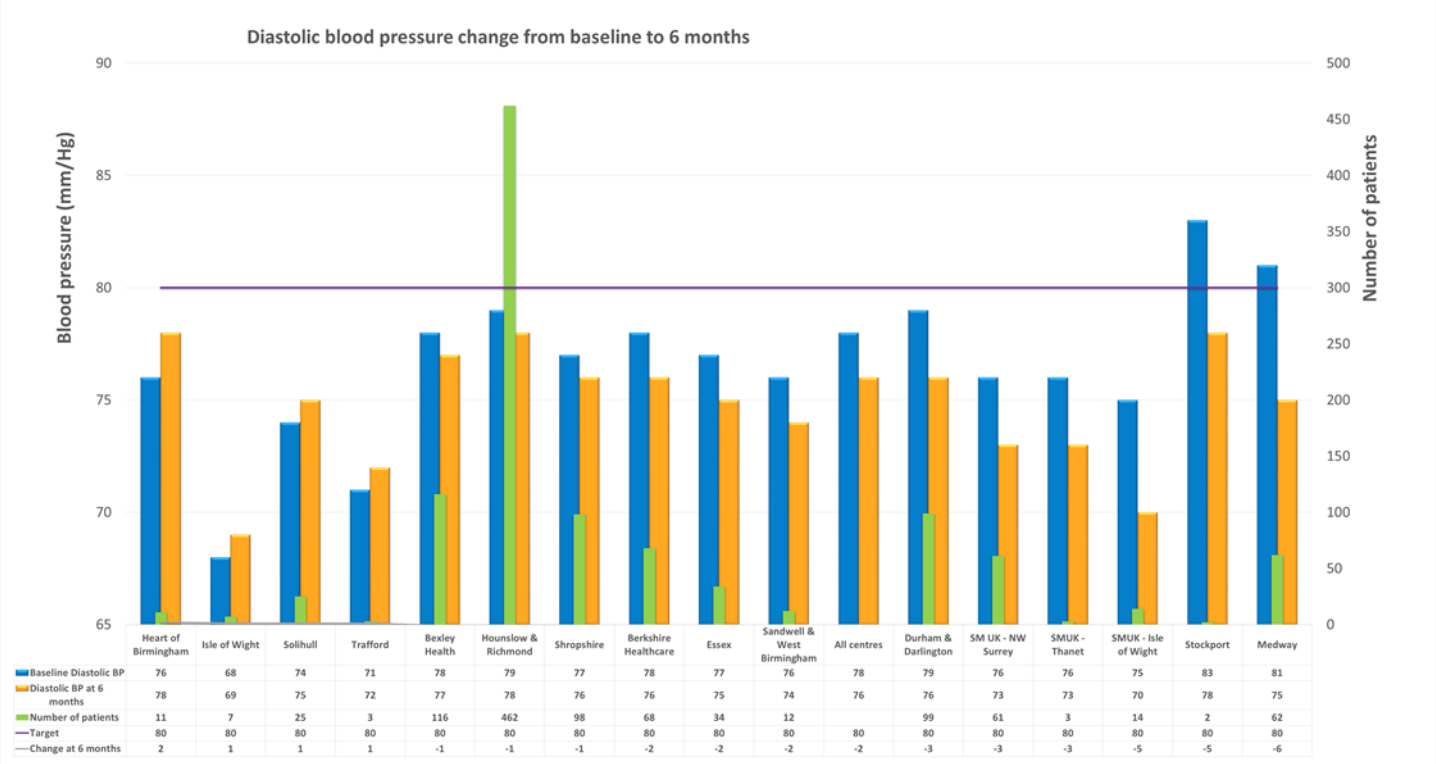
At 6 months the mean *all centre* reduction in systolic blood pressure for X-PERT participants was 4 mmHg (95% CI: -4, -4), from 133 to 129 mmHg. Target systolic blood pressure for an individual with Type 2 diabetes with no microvascular complications is ≤ 140 mmHg and the recommendation for Type 1 diabetes and for those with retinopathy or nephropathy is ≤ 130 mmHg. Seventeen organisations provided systolic BP data at 6 months. Fifteen organisations (88%) had mean blood pressure values below the 140 mmHg target at baseline. At 6 months, 11 organisations (73%) demonstrated a mean reduction in systolic blood pressure, moving towards or below the 130 mmHg target. Durham & Darlington achieved the most robust results at 6 months, with a mean reduction of 7 mmHg for 99 matched participant data sets.



	Trafford	Essex	Homerton	Sandwell & West Birmingham	Swansea	Argyll & Bute	Berkshire Healthcare	Shropshire	Solihull	Medway	Bexley Health	Betsi Cadwaladr	Heart of Birmingham	Stockport	All centres	Barts - London	Hounslow & Richmond	Isle of Wight	SMUK - Isle of Wight	SM UK - NW Surrey	Birmingham - Heart of England
Baseline Systolic BP	117	127	129	152	130	133	131	130	133	136	129	135	148	133	131	128	132	128	140	129	150
Systolic BP at 12 months	128	132	134	154	132	134	132	131	134	136	128	133	146	131	129	125	128	124	132	118	130
Number of patients	1	28	6	2	66	43	82	6	15	13	54	57	5	59		49	590	7	1	7	1
Change at 12 months	11	5	5	2	2	1	1	1	1	0	-1	-2	-2	-2	-2	-3	-4	-4	-8	-11	-20
Target	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140	140

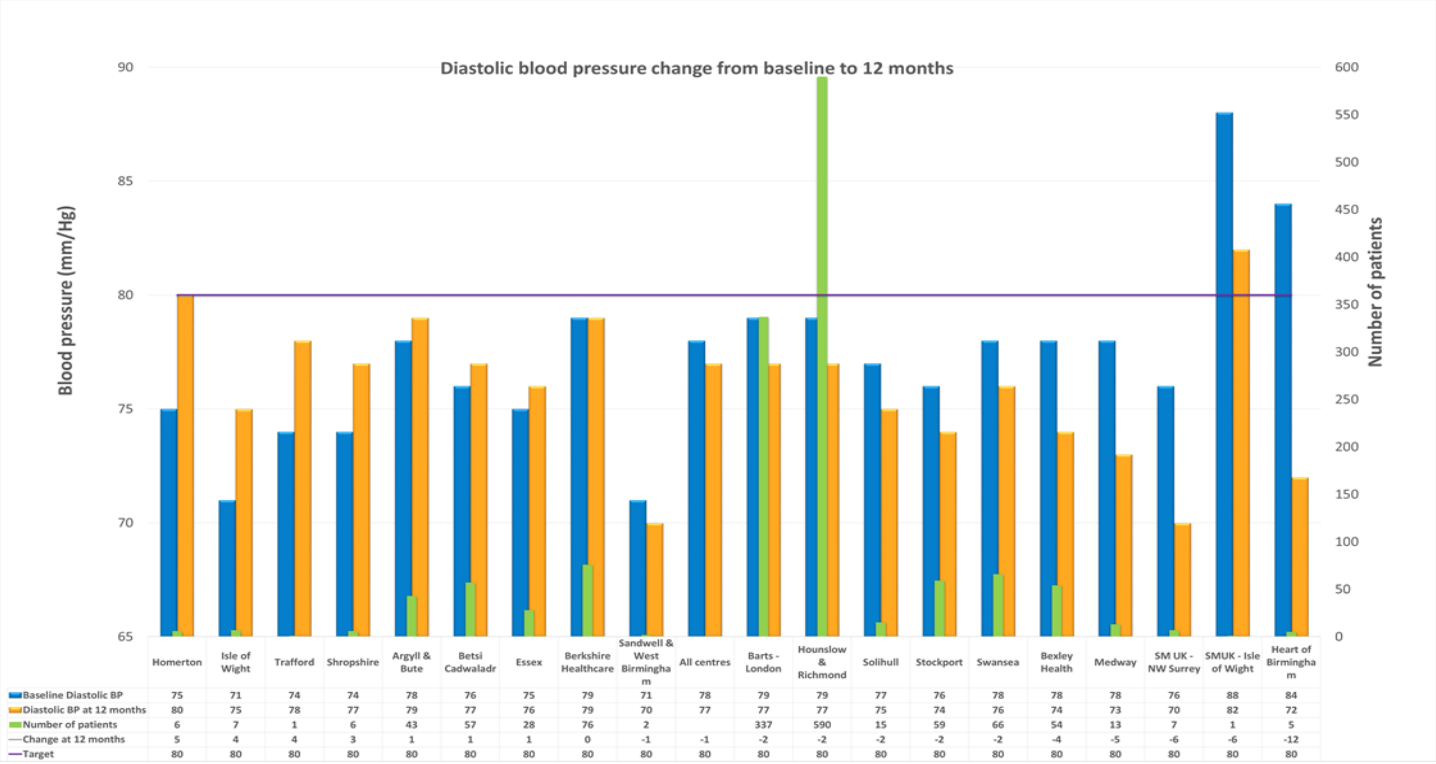
At 12 months the mean *all centre* reduction in systolic blood pressure for X-PERT participants was 2 mmHg (95% CI: -2, -2), from 131 to 129 mmHg. Twenty organisations reported systolic blood pressure at 12 months with 10 organisations (50%) reporting a mean reduction. Hounslow & Richmond reported the most robust data with a mean 4 mmHg reduction for 590 patients.

Diastolic blood pressure



	Heart of Birmingham	Isle of Wight	Solihull	Trafford	Bexley Health	Hounslow & Richmond	Shropshire	Berkshire Healthcare	Essex	Sandwell & West Birmingham	All centres	Durham & Darlington	SM UK - NW Surrey	SMUK - Thanet	SMUK - Isle of Wight	Stockport	Medway
Baseline Diastolic BP	76	68	74	71	78	79	77	78	77	76	78	79	76	76	75	83	81
Diastolic BP at 6 months	78	69	75	72	77	78	76	76	75	74	76	76	73	73	70	78	75
Number of patients	11	7	25	3	116	462	98	68	34	12		99	61	3	14	2	62
Target	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
Change at 6 months	2	1	1	1	-1	-1	-1	-2	-2	-2	-2	-3	-3	-3	-5	-5	-6

At 6 months the mean *all centre* reduction in diastolic blood pressure for X-PERT participants was 2 mmHg (95% CI: -2, -2), from 78 to 76 mmHg. The recommended diastolic blood pressure for people with diabetes is ≤80 mmHg. Sixteen organisations entered data for diastolic blood pressure at 6 months and all organisations (100%) reported a mean diastolic blood pressure ≤80 mmHg at 6 months. Medway achieved the best results with a mean reduction of 6 mmHg with 62 matched participant data sets.

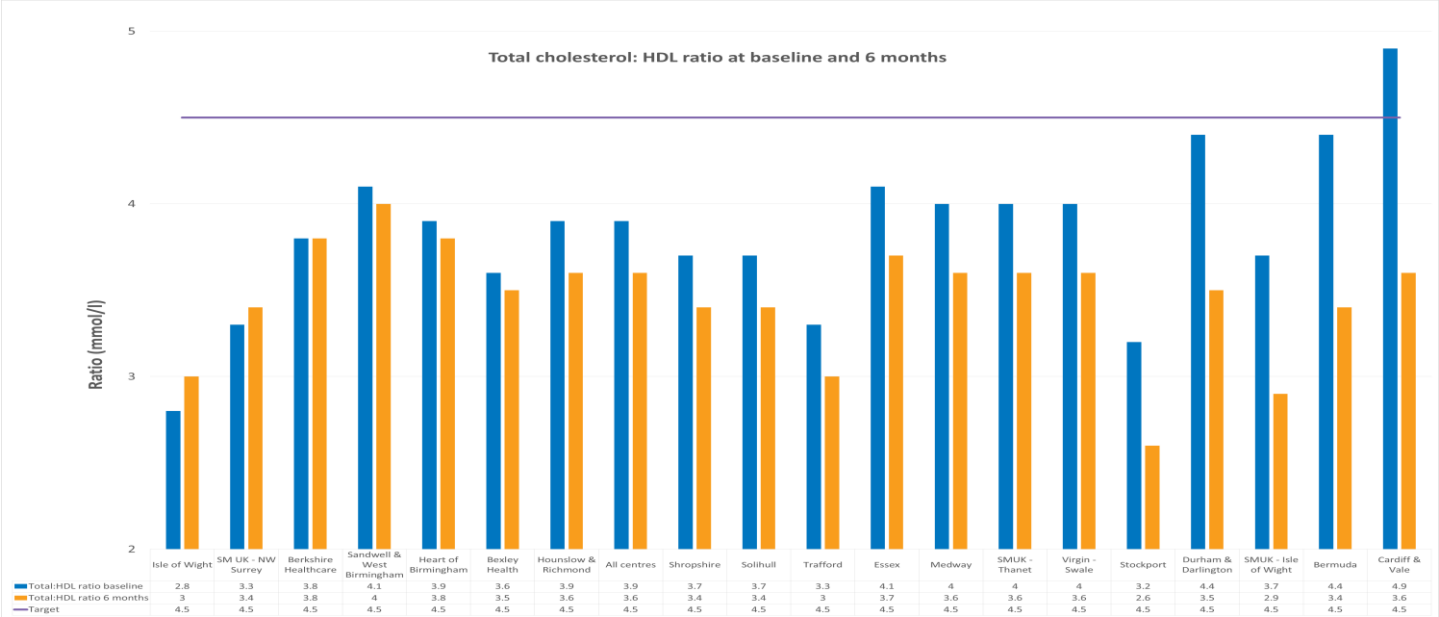


	Homerton	Isle of Wight	Trafford	Shropshire	Argyll & Bute	Betsi Cadwaladr	Essex	Berkshire Healthcare	Sandwell & West Birmingham	All centres	Barts - London	Hounslow & Richmond	Solihull	Stockport	Swansea	Bexley Health	Medway	SM UK - NW Surrey	SMUK - Isle of Wight	Heart of Birmingham
Baseline Diastolic BP	75	71	74	74	78	76	75	79	71	78	79	79	77	76	78	78	78	76	88	84
Diastolic BP at 12 months	80	75	78	77	79	77	76	79	70	77	77	77	75	74	76	74	73	70	82	72
Number of patients	6	7	1	6	43	57	28	76	2		337	590	15	59	66	54	13	7	1	5
Change at 12 months	5	4	4	3	1	1	1	0	-1	-1	-2	-2	-2	-2	-2	-4	-5	-6	-6	-12
Target	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80

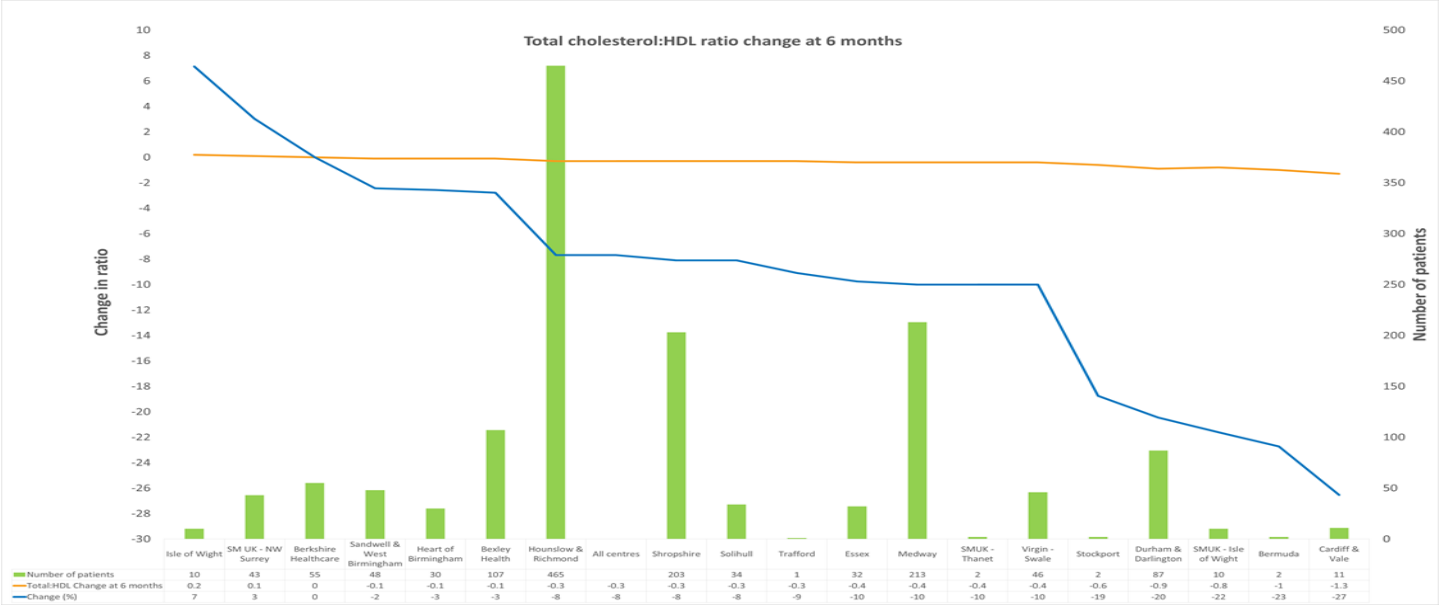
At 12 months the mean *all centre* reduction in diastolic blood pressure for X-PERT participant was 1 mmHg (95% CI: -1, -1), from 78 to 77 mmHg. Nineteen organisations reported diastolic blood pressure at 12 months. Eighteen organisations (95%) had mean diastolic blood pressure readings ≤80 mmHg at 6 months. The most robust data was from Bexley Health who achieved a 4 mmHg reduction for 54 participants.

Total cholesterol to HDL cholesterol ratio

Total cholesterol to high-density lipoprotein (HDL) cholesterol ratio is as a good predictor of cardiovascular risk. This ratio is calculated by dividing total cholesterol level by HDL. Ideally it should be below 4.5, with a higher ratio indicating an increased risk of heart disease. A ratio above 6 is regarded as representing a high risk of heart disease. Where organisations enter total cholesterol and HDL cholesterol into the X-PERT audit database this ratio is automatically calculated.

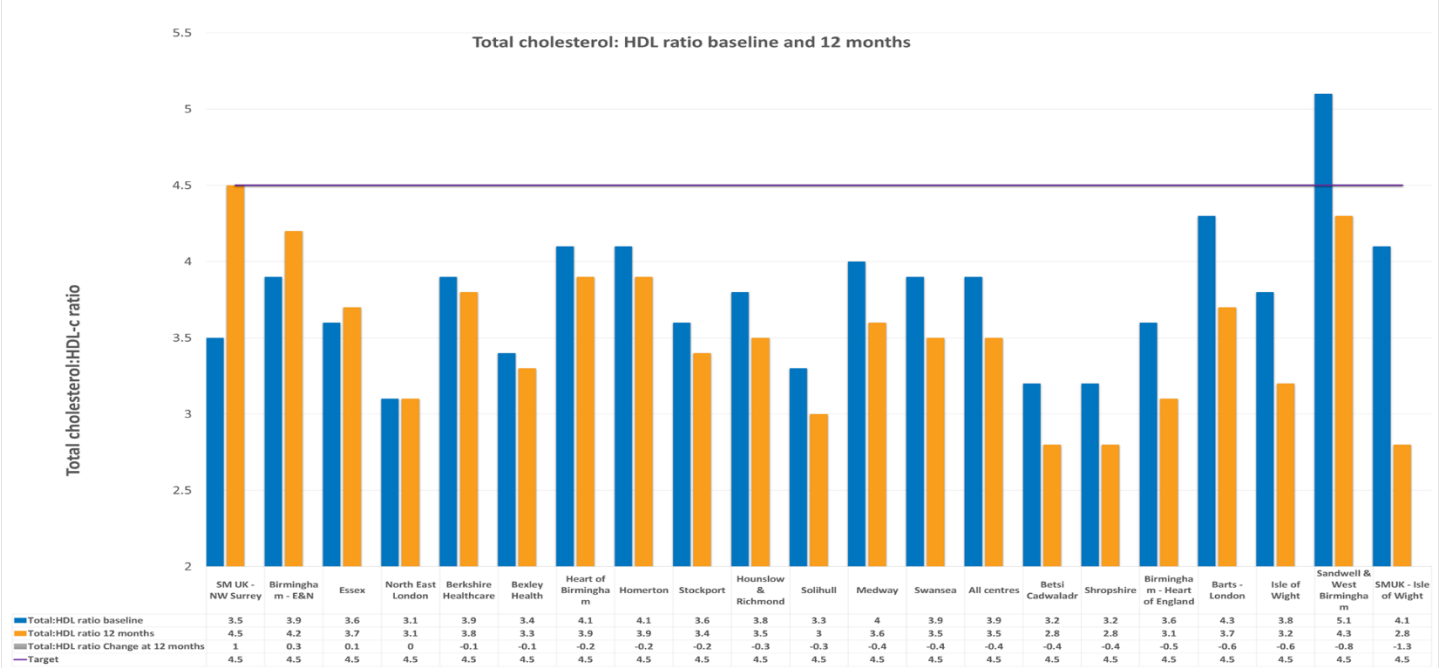


	Isle of Wight	SM UK - NW Surrey	Berkshire Healthcare	Sandwell & West Birmingham	Heart of Birmingham	Bexley Health	Hounslow & Richmond	All centres	Shropshire	Solihull	Trafford	Essex	Medway	SMUK - Thanet	Virgin - Swale	Stockport	Durham & Darlington	SMUK - Isle of Wight	Bermuda	Cardiff & Vale
Total:HDL ratio baseline	2.8	3.3	3.8	4.1	3.9	3.6	3.9	3.9	3.7	3.7	3.3	4.1	4	4	4	3.2	4.4	3.7	4.4	4.9
Total:HDL ratio 6 months	3	3.4	3.8	4	3.8	3.5	3.6	3.6	3.4	3.4	3	3.7	3.6	3.6	3.6	2.6	3.5	2.9	3.4	3.6
Target	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5

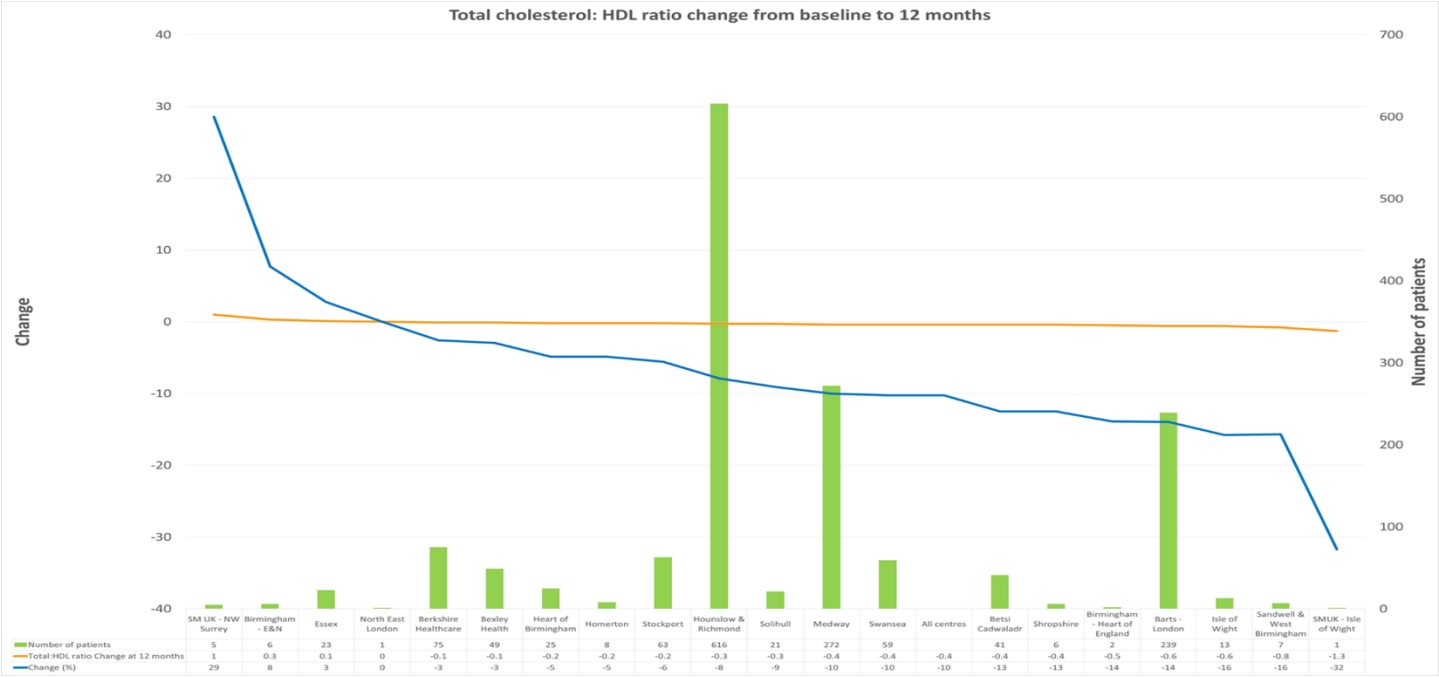


	Isle of Wight	SM UK - NW Surrey	Berkshire Healthcare	Sandwell & West Birmingham	Heart of Birmingham	Bexley Health	Hounslow & Richmond	All centres	Shropshire	Solihull	Trafford	Essex	Medway	SMUK - Thanet	Virgin - Swale	Stockport	Durham & Darlington	SMUK - Isle of Wight	Bermuda	Cardiff & Vale
Number of patients	10	43	55	48	30	107	465		203	34	1	32	213	2	46	2	87	10	2	11
Total:HDL Change at 6 months	0.2	0.1	0	-0.1	-0.1	-0.1	-0.3	-0.3	-0.3	-0.3	-0.3	-0.4	-0.4	-0.4	-0.4	-0.6	-0.9	-0.8	-1	-1.3
Change (%)	7	3	0	-2	-3	-3	-8	-8	-8	-8	-9	-10	-10	-10	-10	-19	-20	-22	-23	-27

At 6 months the mean *all centre* reduction in total cholesterol to HDL cholesterol ratio was 0.3 (95% CI: -0.3, -0.2), from 3.9 to 3.6 (an 8% reduction). Total cholesterol to HDL cholesterol ratio was calculated for nineteen organisations. Sixteen organisations (84%) demonstrated a reduction between 0.1 (2%) and 1.3 (27%). Durham & Darlington achieved the most robust results with a 20% mean reduction of 0.9 with 87 matched participant data sets.



	SM UK - NW Surrey	Birmingham - E&N	Essex	North East London	Berkshire Healthcare	Bexley Health	Heart of Birmingham	Homerton	Stockport	Hounslow & Richmond	Solihull	Medway	Swansea	All centres	Betsi Cadwaladr	Shropshire	Birmingham - Heart of England	Barts - London	Isle of Wight	Sandwell & West Birmingham	SMUK - Isle of Wight
Total:HDL ratio baseline	3.5	3.9	3.6	3.1	3.9	3.4	4.1	4.1	3.6	3.8	3.3	4	3.9	3.9	3.2	3.2	3.6	4.3	3.8	5.1	4.1
Total:HDL ratio 12 months	4.5	4.2	3.7	3.1	3.8	3.3	3.9	3.9	3.4	3.5	3	3.6	3.5	3.5	2.8	2.8	3.1	3.7	3.2	4.3	2.8
Total:HDL ratio Change at 12 months	1	0.3	0.1	0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-0.6	-0.6	-0.8	-1.3
Target	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5

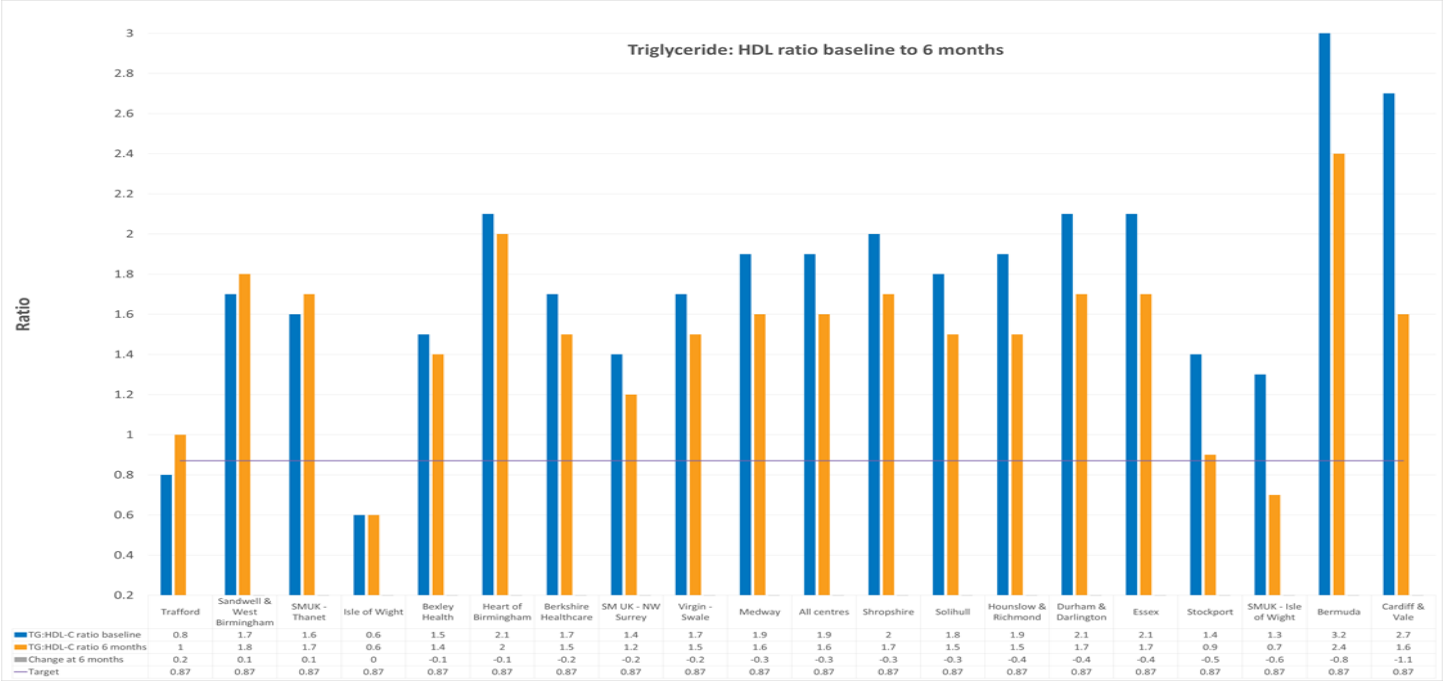


	SM UK - NW Surrey	Birmingham - E&N	Essex	North East London	Berkshire Healthcare	Bexley Health	Heart of Birmingham	Homerton	Stockport	Hounslow & Richmond	Solihull	Medway	Swansea	All centres	Betsi Cadwaladr	Shropshire	Birmingham - Heart of England	Barts - London	Isle of Wight	Sandwell & West Birmingham	SMUK - Isle of Wight
Number of patients	5	6	23	1	75	49	25	8	63	616	21	272	59		41	6	2	239	13	7	1
Total:HDL ratio Change at 12 months	1	0.3	0.1	0	-0.1	-0.1	-0.2	-0.2	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4	-0.4	-0.4	-0.5	-0.6	-0.6	-0.8	-1.3
Change (%)	29	8	3	0	-3	-3	-5	-5	-6	-8	-9	-10	-10	-10	-13	-13	-14	-14	-16	-16	-32

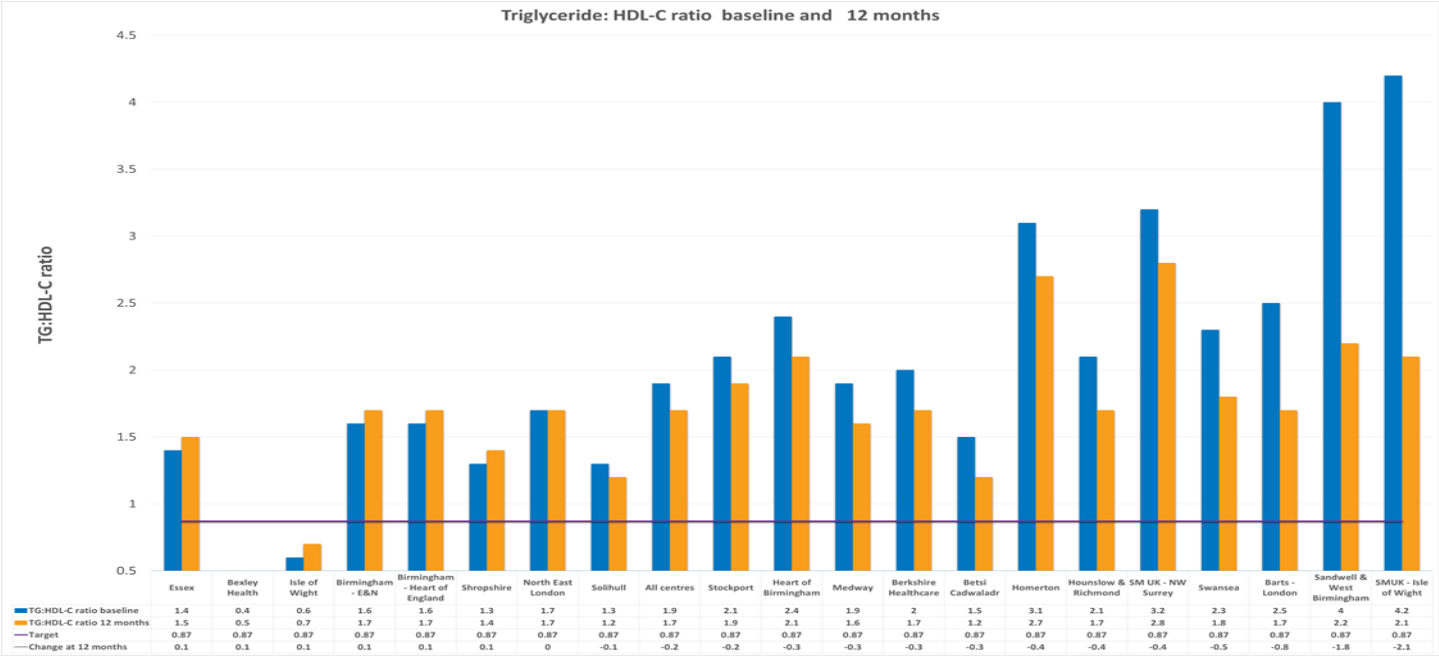
At 12 months the mean *all centre* reduction in total cholesterol to HDL cholesterol ratio for X-PERT participants was 0.4 (95% CI: -0.4, -0.3), from 3.9 to 3.5. Twenty organisations entered data for total cholesterol and HDL cholesterol at baseline and 12 months to enable the ratio to be calculated. Sixteen organisations (80%) demonstrated a mean ratio reduction of between 0.1 (3%) and 1.3 (32%). Barts – London demonstrated the most robust results with a 14% mean reduction of 0.6 with 239 matched participant data sets.

Triglyceride to HDL cholesterol ratio

The triglyceride to HDL cholesterol ratio (TG:HDL-C ratio) correlates CVD risk in both men and women. The ideal ratio is less than 0.87, with higher levels, especially those above 2.62, indicating increased risk. Where organisations enter triglyceride and HDL cholesterol into the X-PERT audit database this ratio is automatically calculated.



At 6 months the mean *all centre* reduction in TG:HDL-C ratio was 0.3 (CI 95%: -0.4, -0.2), from 1.9 to 1.6 (-16%). Nineteen organisations provided triglyceride and HDL-C results at baseline and 6 months to enable this ratio to be calculated. Fifteen organisations (79%) demonstrated a reduction in the TG:HDL-C ratio of between 0.1 (7%) and 1.1 (41%). However, all but two organisations (13%) remained above the stated target. Durham & Darlington achieved the most robust improvement of -0.4 for 96 matched participant data sets.



At 12 months the mean *all centre* reduction in TG:HDL-C ratio was 0.2 (95% CI: -0.3, -0.1), from 1.9 to 1.7. Twenty organisations provided triglyceride and HDL-C results at baseline and 12 months to enable this ratio to be calculated. Thirteen organisations (65%) demonstrated a reduction in the TG:HDL-C ratio of between 0.1 (8%) and 2.1 (50%). However, all organisations apart from one (95%) remained above the 0.87 target. Swansea demonstrated the most robust improvement of 0.5 (22%) for 62 matched participant data sets.

Taking all these criteria into account, the organisation with the greatest improvement in cardiovascular disease risk factors is Hounslow & Richmond. The organisation saw a 3 mmHg reduction in systolic blood pressure at 6 (472 matched data sets) and a 4 mmHg reduction at 12 months (590 matched data sets); 1 mmHg reduction in diastolic blood pressure

at 6 months (462 matched data sets) and a 2 mmHg reduction at 12 months (590 matched data sets); 0.3 (8%) reduction in total cholesterol to HDL ratio at 6 months (465 matched data) and 0.3 (8%) reduction in total cholesterol to HDL ratio at 12 months (616 matched data sets); 0.4 (21%) reduction in TG:HDL ratio at 6 months (41 matched data sets) and 0.4 (19%) reduction in TG:HDL ratio at 12 months (63 matched data sets). Medway have been awarded 2nd place, with 3rd place being jointly awarded to Bexley Health (for blood pressure improvements) and Berkshire Healthcare (for blood lipid improvements). Highly commended is Durham & Darlington and Shropshire for 6 month data and Swansea and Barts for 12 month data.

X-PERT Diabetes Virtual – clinical results

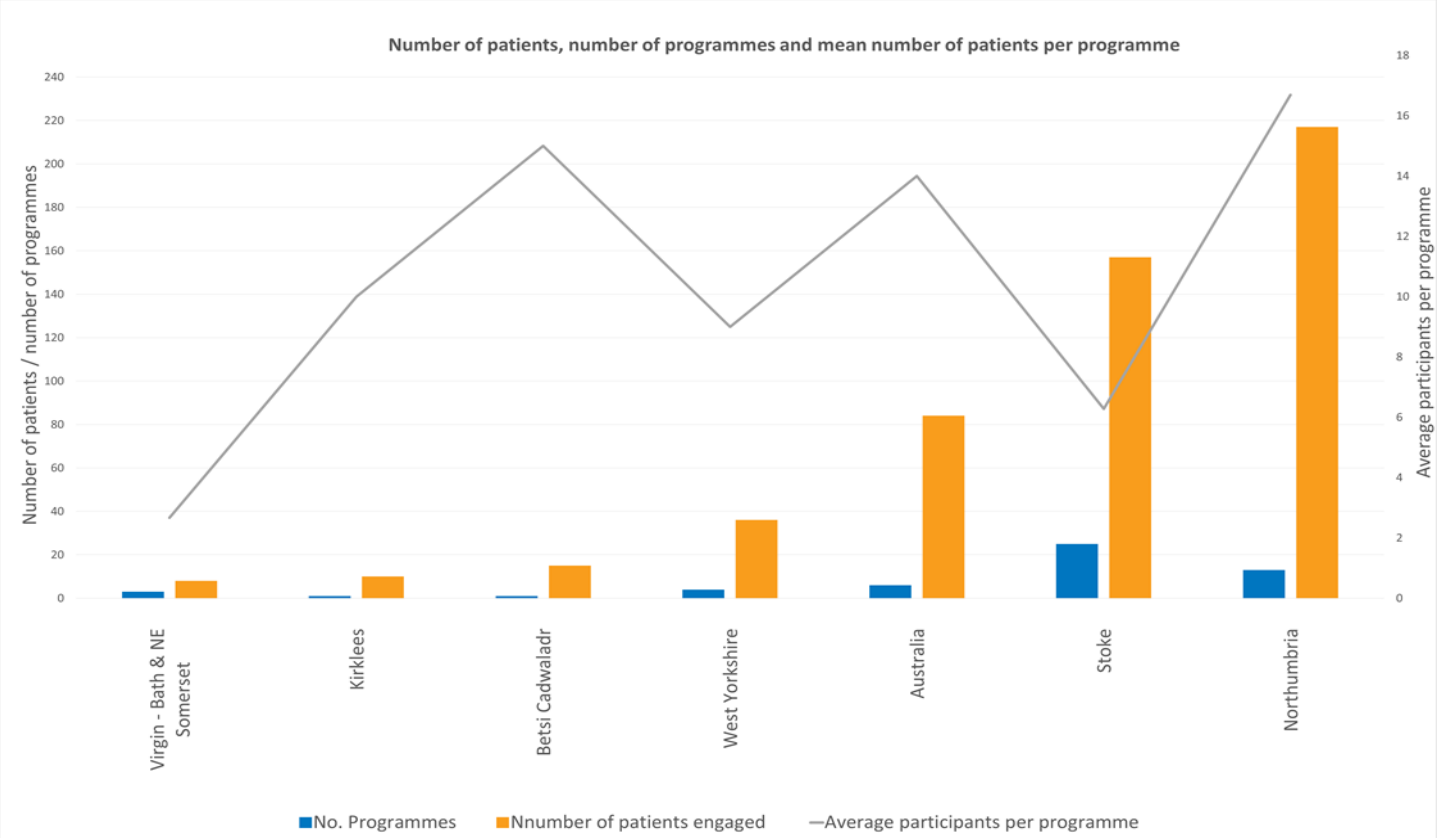
This is the first time that there has been an award for delivering the X-PERT Diabetes Programme remotely. Five organisations entered data for remote delivery between January 2019 and December 2020. There are joint winners with Hounslow & Richmond receiving the award for the best 6 month data (mean weight loss -1.7kg [-2%], 50 matched patient data sets and mean HbA1c reduction (-8.1 mmol/mol, 62 matched patient data sets) and Barts – London receiving the award for the best 12 month data (mean weight loss -1.7kg [-2%], 48 matched patient data sets and mean HbA1c reduction (-8.3 mmol/mol, 53 matched patient data sets).

X-PERT Diabetes Digital – clinical results

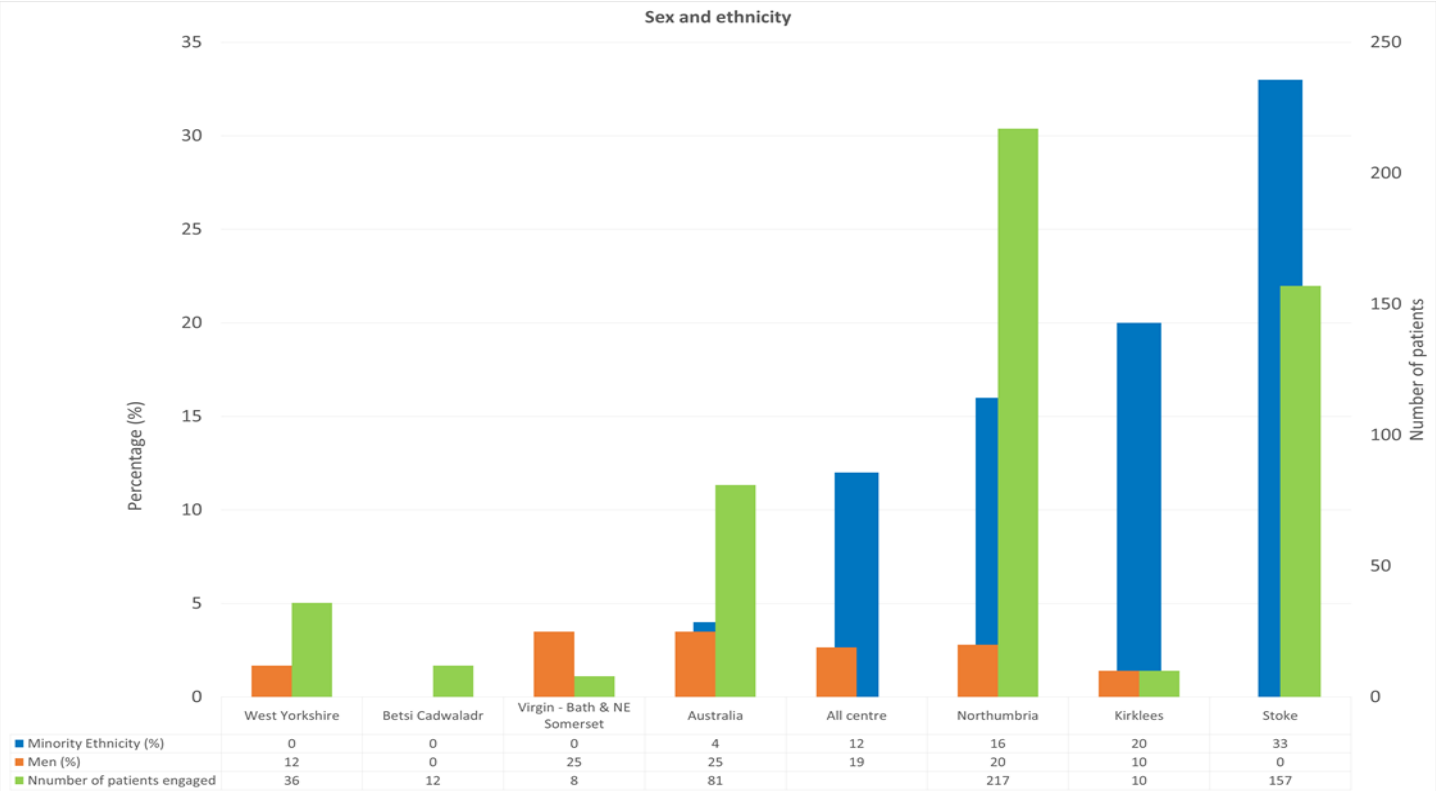
The X-PERT Diabetes Digital Programme was launched in April 2020. Between April and December 2020, the database captured audit data from Bassetlaw, SMUK - NW Surrey, Cardiff & Vale, Hounslow & Richmond and SW London. The organisation that has obtained the best results for this early adoption is SW London who have demonstrated a mean reduction in body weight of 13.1kg (95% CI; -15.3, -10.9) from 116.8kg to 103.7kg and a mean HbA1c reduction of 34.5 mmol/mol from 68.5 to 34 mmol/mol.

X-PERT Weight – implementation and anthropometric results

In 2019-20, seven organisations delivered the X-PERT Weight Programme and entered outcomes into the audit database. Fifty-five programmes were delivered to 521 participants, with a mean number of participants per programme of nine. Where age was known, 2% were younger than 25; 6% were 25-34 years; 11% 35-44 years; 32% 45-54 years; 31% 55-64 years; 15% 65-74 years; 3% 75-84 years; 1% 85 years and above.

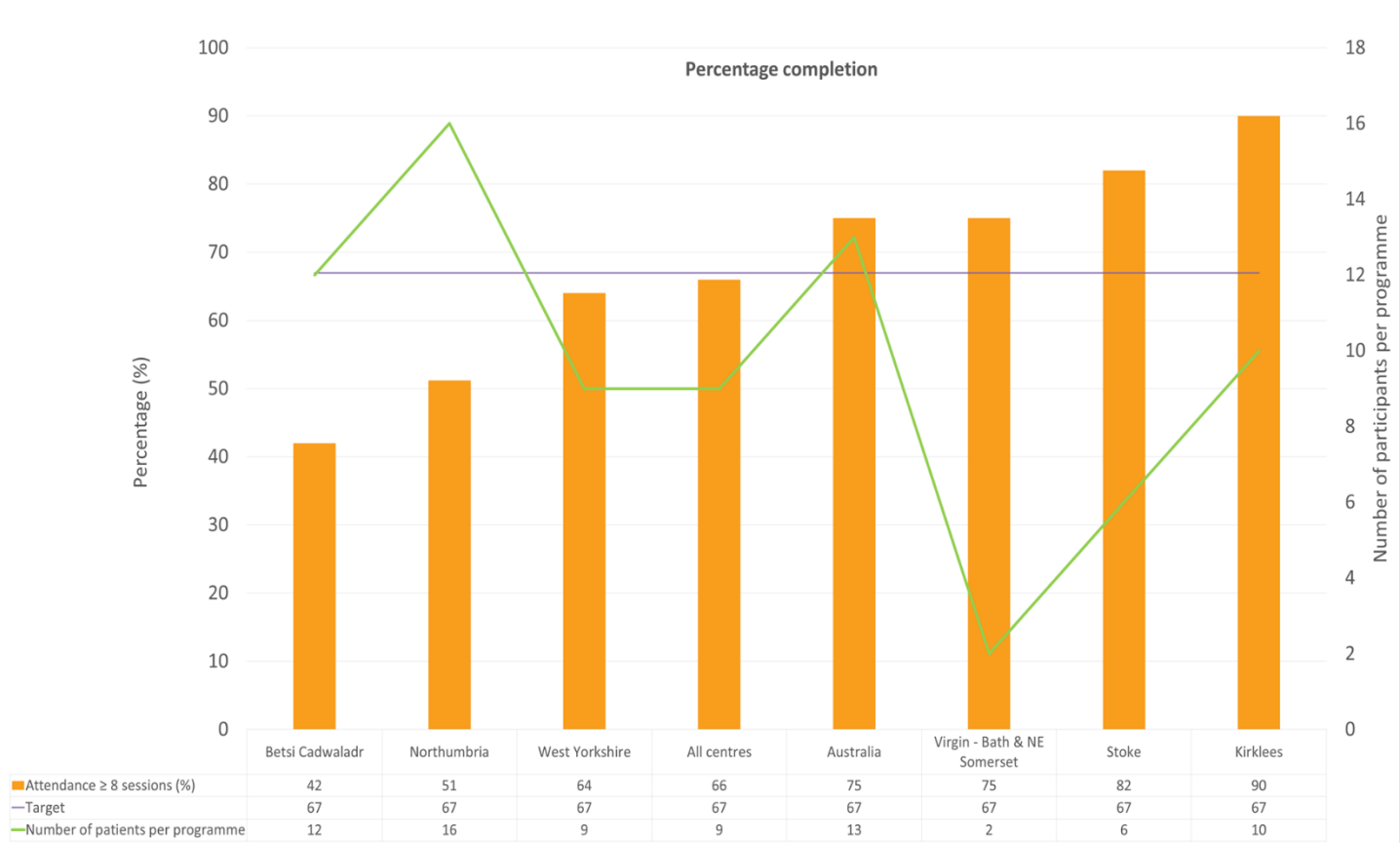


Participants were more likely to be women with the proportion of males varying from 0% in Stoke to 25% in Australia. The percentage of participants from ethnic minority groups was not reported for Betsi Cadwaladr and ranged from 0% in West Yorkshire and Virgin – Bath & NE Somerset to 33% in Stoke.



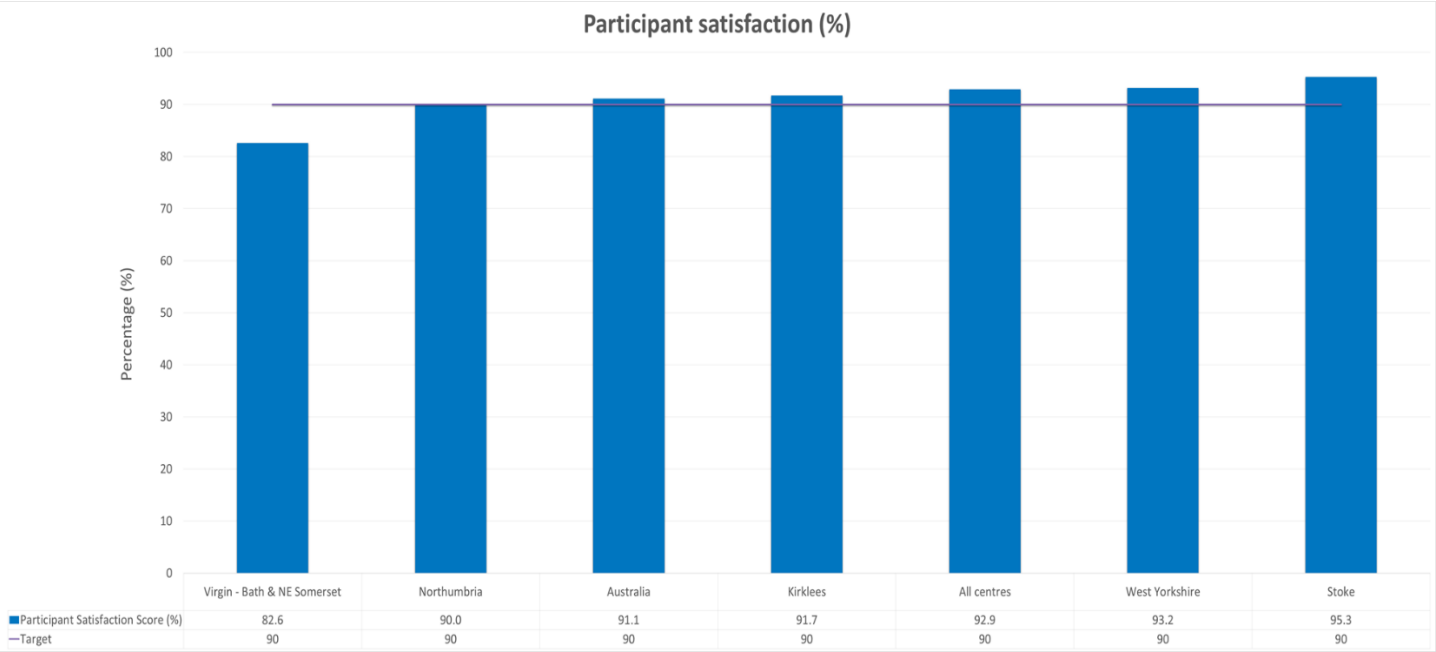
	West Yorkshire	Betsi Cadwaladr	Virgin - Bath & NE Somerset	Australia	All centre	Northumbria	Kirklees	Stoke
Minority Ethnicity (%)	0	0	0	4	12	16	20	33
Men (%)	12	0	25	25	19	20	10	0
Nnumber of patients engaged	36	12	8	81		217	10	157

Completion is defined as attending eight or more sessions and the audit standard is that two-thirds (67%) of participants complete the programme (purple line in the graph below). The all centres mean is 66% completion with Kirklees obtaining the best completion rate with a figure of 90%.



	Betsi Cadwaladr	Northumbria	West Yorkshire	All centres	Australia	Virgin - Bath & NE Somerset	Stoke	Kirklees
Attendance ≥ 8 sessions (%)	42	51	64	66	75	75	82	90
Target	67	67	67	67	67	67	67	67
Number of patients per programme	12	16	9	9	13	2	6	10

The audit standard for participant satisfaction is 90%. All organisations achieve the audit standard except Virgin – Bath & NE Somerset who fell slightly below with a satisfactorily score of 82.6%.

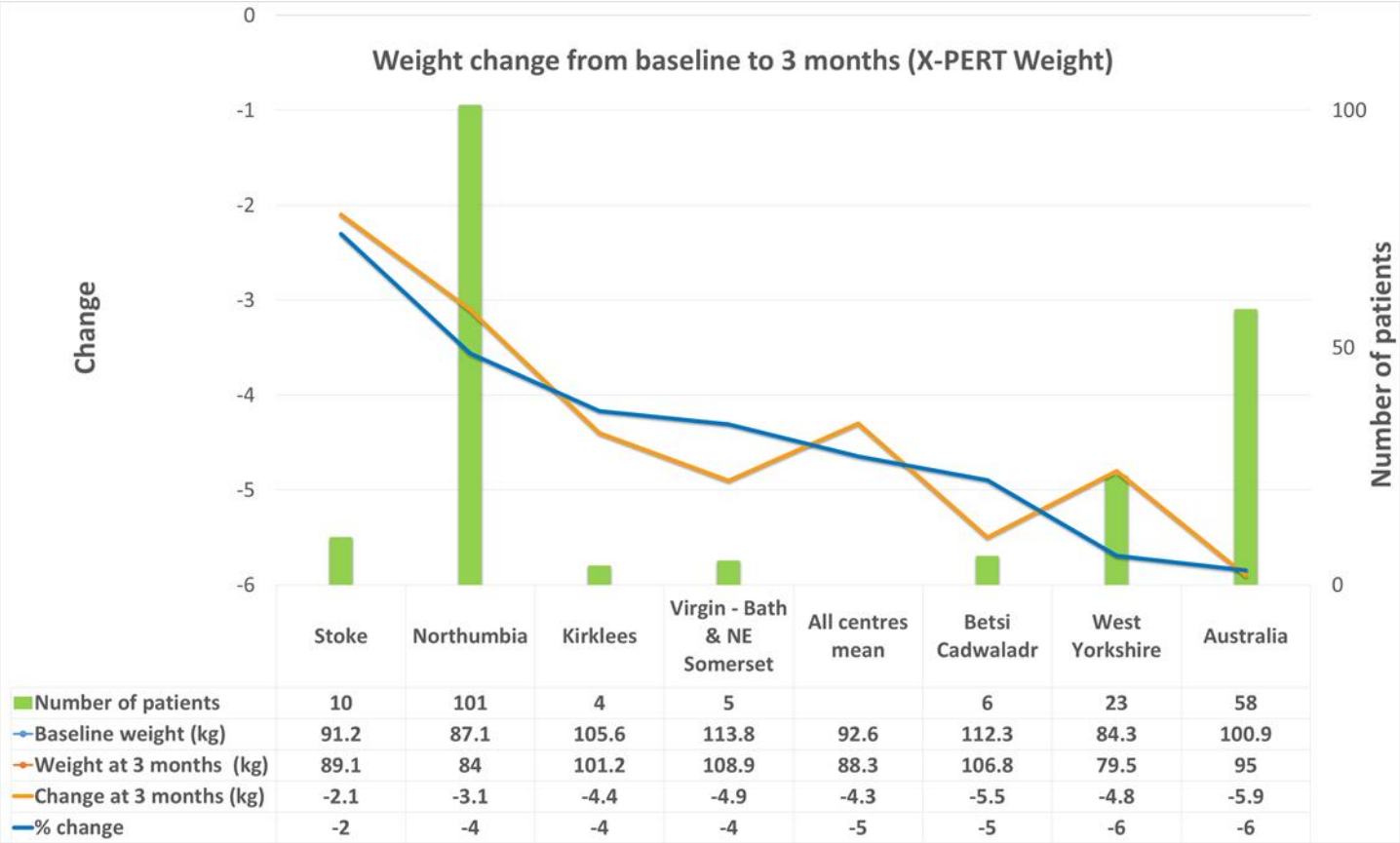


	Virgin - Bath & NE Somerset	Northumbria	Australia	Kirklees	All centres	West Yorkshire	Stoke
Participant Satisfaction Score (%)	82.6	90.0	91.1	91.7	92.9	93.2	95.3
Target	90	90	90	90	90	90	90

Eating behaviour is assessed using a validated questionnaire at baseline and 3 months. The audit standard for improvement in eating behaviour is 10%. All organisations achieved this from a 30% improvement (West Yorkshire) to 57% improvement (Virgin – Bath & NE Somerset).

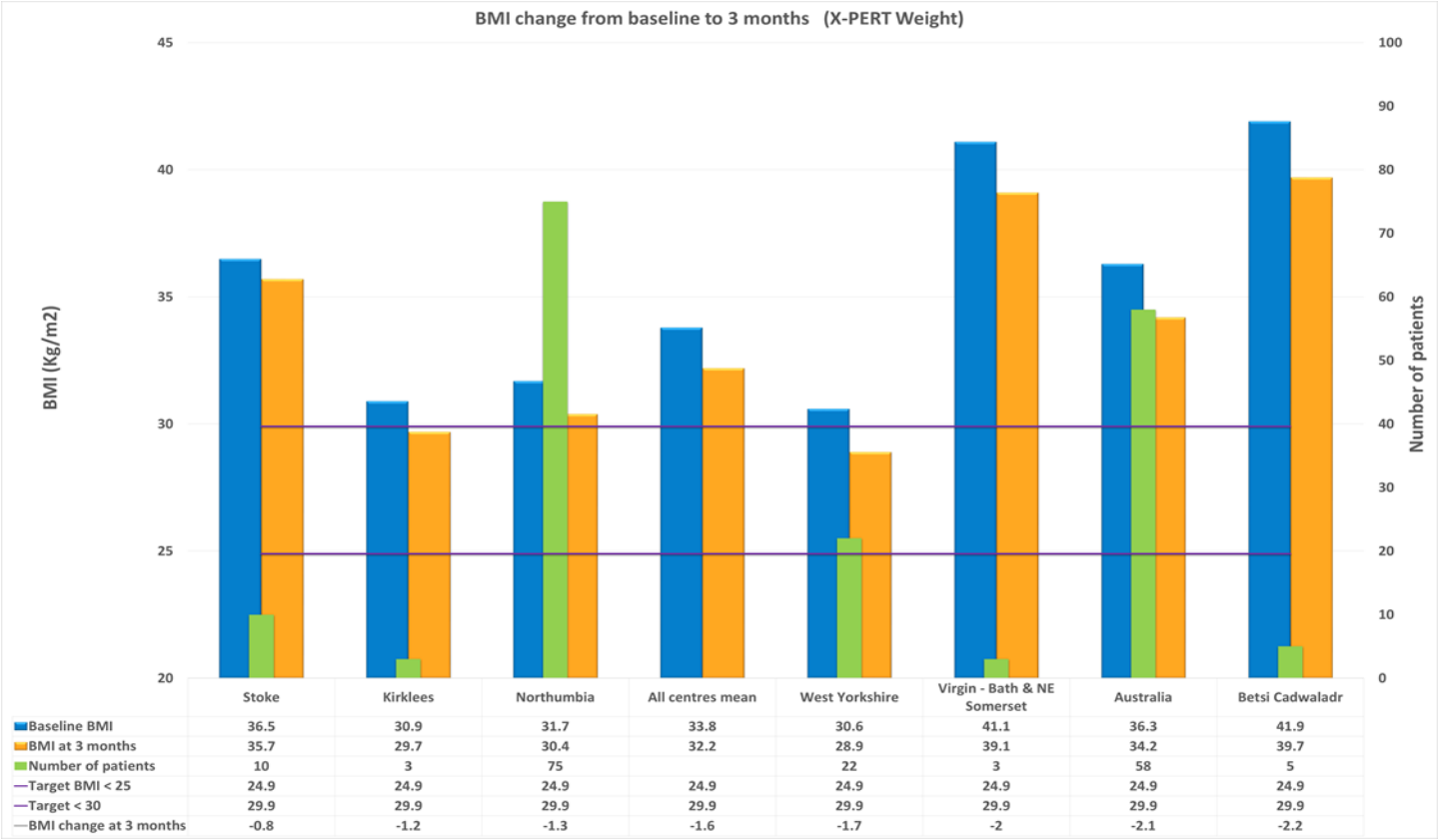
	West Yorkshire	Northumbria	Australia	All centres	Stoke	Virgin - Bath & NE Somerset
Improvement in eating behaviour score (%)	30.1	40.4	43.3	44.6	48.4	56.6
Target	10	10	10	10	10	10

The mean weight loss across all the organisations was 4.3kg (5%). Helen Chauhan in Melbourne, Australia achieved the greatest robust improvement with a mean weight loss of 5.9kg (6%) for 58 participants.



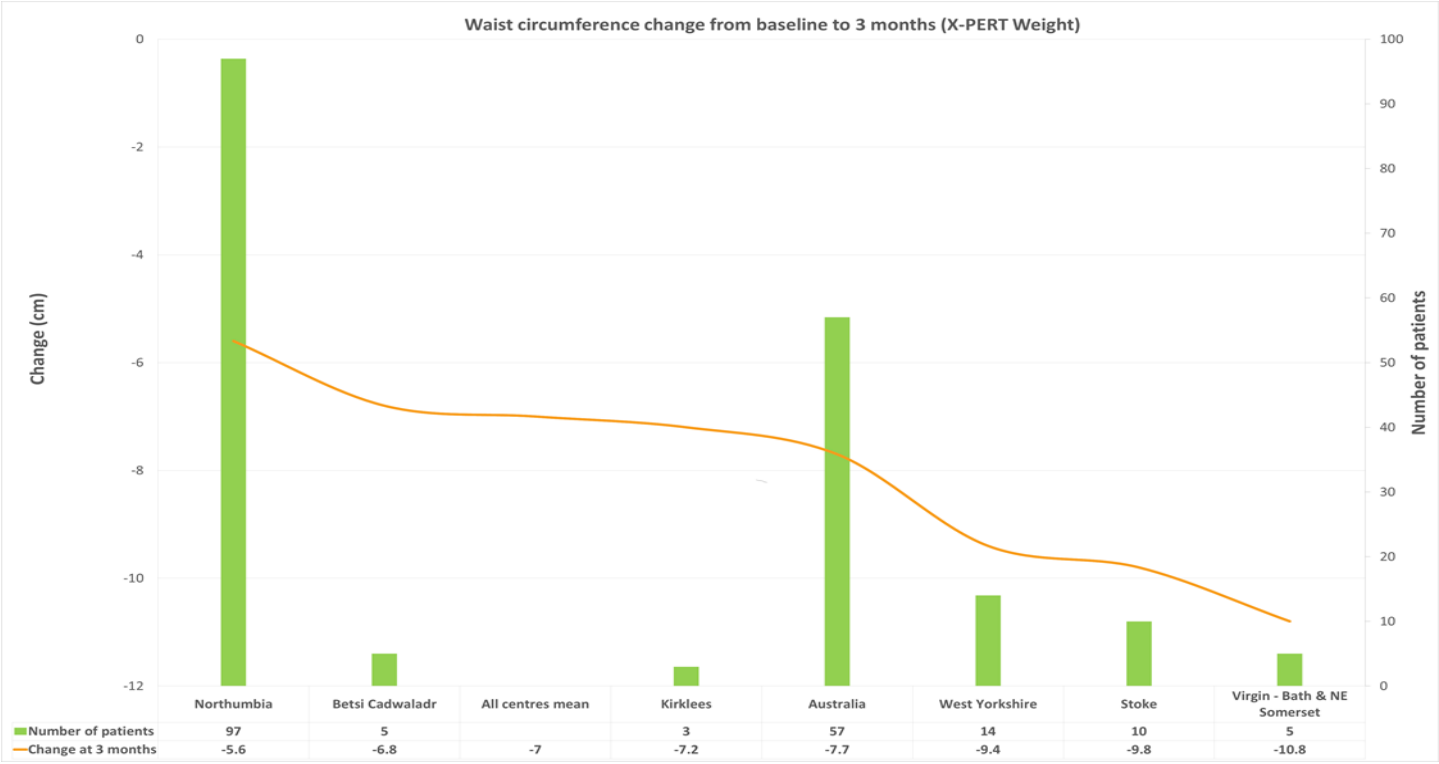
	Stoke	Northumbia	Kirklees	Virgin - Bath & NE Somerset	All centres mean	Betsi Cadwaladr	West Yorkshire	Australia
Number of patients	10	101	4	5		6	23	58
Baseline weight (kg)	91.2	87.1	105.6	113.8	92.6	112.3	84.3	100.9
Weight at 3 months (kg)	89.1	84	101.2	108.9	88.3	106.8	79.5	95
Change at 3 months (kg)	-2.1	-3.1	-4.4	-4.9	-4.3	-5.5	-4.8	-5.9
% change	-2	-4	-4	-4	-5	-5	-6	-6

The mean reduction in BMI was 1.6 kg/m². Helen Chauhan in Australia achieved the most robust reduction of 2.1 kg/m² for 58 participants.



	Stoke	Kirklees	Northumbia	All centres mean	West Yorkshire	Virgin - Bath & NE Somerset	Australia	Betsi Cadwaladr
Baseline BMI	36.5	30.9	31.7	33.8	30.6	41.1	36.3	41.9
BMI at 3 months	35.7	29.7	30.4	32.2	28.9	39.1	34.2	39.7
Number of patients	10	3	75		22	3	58	5
Target BMI < 25	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
Target < 30	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9
BMI change at 3 months	-0.8	-1.2	-1.3	-1.6	-1.7	-2	-2.1	-2.2

The mean reduction in waist circumference was 7 cm (95% CI: -7.3, -6.7). All organisations achieved a mean reduction of between 5.6cm and 10.8cm.



	Northumbia	Betsi Cadwaladr	All centres mean	Kirklees	Australia	West Yorkshire	Stoke	Virgin - Bath & NE Somerset
Number of patients	97	5		3	57	14	10	5
Change at 3 months	-5.6	-6.8	-7	-7.2	-7.7	-9.4	-9.8	-10.8

The X-PERT Weight award for the best anthropometric results goes to Helen Chauhan in Australia who had 58 matched data sets and achieved 5.9kg weight loss, 2.1kg/m² reduction in BMI and 7.7cm reduction in waist circumference.

Discussion

The evidence base demonstrating the success of the X-PERT Programme has already been established from the randomised controlled trial. The purpose of the audit is to benchmark the results from implementation against the published evidence base to determine whether national implementation is as effective as the clinical trial.

This year's results are encouraging and demonstrate that implementation of the X-PERT Programmes continue to be effective. During these challenging times with the COVID-19 pandemic, it has become necessary to extend the interface of group-based structured education to virtual and digital means. Fortunately we now have a menu of options available to enable participants to access, and engage in, education in their own homes:

1. The X-PERT Diabetes Digital Programme where the content of the structured education programme can be accessed via an app - iOS, Android or Web in 15 different languages. This is both QISMET and ORCHA-accredited
2. Delivery of the full X-PERT Diabetes, X-PERT Insulin and X-PERT Weight Programmes virtually via video conferencing platforms such as Microsoft Teams and Zoom utilising the bespoke digital boards that enable discovery learning using 'drag and drop' resources
3. Providing participants with links to the relevant summary key learning points (KLPs) videos and then arranging weekly group sessions via a virtual platform to discuss session content, answer queries and facilitate goal setting.

N.B. All the above options require an X-PERT Diabetes, X-PERT Insulin or X-PERT Weight Handbook/Resource Folder to be mailed to each participant.

Audit is essential to assess whether programme implementation is effective, and so it is important that efforts are made to maximise the collection and entry of relevant data. The 2017-18 audit data is currently in press to be published in a peer-reviewed journal.

Limitations

On-going audit does not have the same meticulous regulation as collecting data as part of a controlled trial, and as such there are a number of limitations. Principle amongst these is the lack of time available for healthcare professionals to follow up with participants and/or to enter data, especially during the COVID-19 pandemic.

To maximise the validity of the presented data X-PERT only uses matched data as part of its audit process, in contrast to many other organisations who compare baseline and post-programme averages despite these averages being based on different sets of participants. This method does however also reduce the amount of data that is available. For example, some organisations have only entered baseline results and therefore no matched data is available. Other organisations have not entered sufficient 6 or 12 month follow-up data, meaning that the number of matched data sets is often limited with wide confidence intervals.

Many organisations are obtaining excellent results whilst others are struggling to meet the audit standards for some outcomes. Some organisations have obstacles in obtaining or entering the data. Educators need to scrutinise less favourable results to ascertain whether it is due to the small sample sizes at follow-up or due to programme delivery. This audit report should help to identify priorities for continuous quality improvement within organisations and X-PERT Health are happy to help and assist with this process.

Annual awards

The X-PERT Health awards recognise best practice on an annual basis. There are seven categories, where awards are presented to the organisations who have obtained the best audit results. These categories are:

- The best participant experience
- The greatest improvement in glycated haemoglobin
- The largest impact on body weight and waist circumference
- The greatest improvement in cardiovascular disease risk factors (BP and lipid ratios)
- The most successful virtual delivery
- The most successful digital delivery
- The most successful X-PERT Weight delivery

The winners were announced via a virtual awards ceremony on Tuesday 30th November.

Winners for each category

The best participant experience

The following criteria were taken into consideration: number of programmes delivered; number of participants per session; uptake (% attending at least one session); attendance (% attending four or more sessions); participant empowerment change and participant satisfaction.

- Winner: Derbyshire Community Health Services NHS Trust
- 2nd place: Self Management UK - North West Surrey CCG
- Joint 3rd place: Birmingham Community Healthcare - E&N and Barts Health NHS Trust

The greatest improvement in glycated haemoglobin

The following criteria were taken into consideration: HbA1c reduction at 6 months and 12 months; number of participants for whom matched data was available; robustness of 95% confidence intervals.

- Joint Winner: Worcestershire Acute Hospitals NHS Trust and Medway Community Healthcare
- 2nd place: Hounslow and Richmond Community Healthcare NHS Trust
- 3rd place: Berkshire Healthcare NHS Foundation Trust

- Highly commended: Durham & Darlington NHS Foundation Trust for 6 month achievements and Barts Health NHS Trust, Swansea Bay University Health Board and Argyll & Bute Community Health Partnership for 12 month achievements

The largest impact on body weight and waist circumference

The following criteria were considered: body weight and waist circumference reduction at 6 months and 12 months; number of participants for whom matched data was available; average number of attendees per programme; robustness of 95% confidence intervals.

- Winner: Berkshire Healthcare NHS Foundation Trust
- 2nd place: Bexley Health Neighbourhood Care CIC
- Joint 3rd place: Essex Partnership University NHS Foundation Trust and University Hospitals Birmingham NHS - Solihull
- Highly commended: Hounslow & Richmond Community Healthcare NHS Trust for weight/BMI and Durham & Darlington NHS Foundation Trust, Self Management UK - North West Surrey CCG, . Medway Community Healthcare and Shropshire Community Health NHS Trust for 6 month data

The greatest improvement in cardiovascular disease risk factors (lipids and BP)

The following criteria were taken into consideration: reduction in total to HDL cholesterol ratio, triglyceride to HDL ratio and blood pressure (systolic and diastolic) at 6 and 12 months; number of participants for whom matched data was available; robustness of 95% confidence intervals.

- Winner: Hounslow and Richmond Community Healthcare NHS Trust
- 2nd place: Medway Community Healthcare
- 3rd place (joint): Bexley Health Neighbourhood Care CIC for improvements in blood pressure and Berkshire Healthcare NHS Foundation Trust for improvements in lipid profiles
- Highly commended: Durham & Darlington NHS Foundation Trust and Shropshire Community Health NHS Trust for 6 month data and Swansea Bay University Health Board and Barts Health NHS Trust for 12 month data

X-PERT Diabetes Virtual Delivery – clinical outcomes

Joint winners: Hounslow and Richmond Community Healthcare NHS Trust for the best 6 month data and Barts Health NHS Trust for the best 12 month data

X-PERT Diabetes Digital Programme – clinical outcomes

Winner: South West London Partnership

X-PERT Weight Programme – anthropometric outcomes

Winner: Helen Chauhan, Australia

Conclusion

X-PERT Health is happy to advise and support organisations in achieving audit standards and improving key performance indicators. Please contact admin@xperthealth.org.uk for more information. Attending regular X-PERT Educator Update Training and the annual X-PERT Conference & Awards also helps with the sharing of good practice to further drive quality improvement.

The results from the comprehensive audit of X-PERT implementation have demonstrated that it is feasible and practical to continue to evaluate the effectiveness of structured education outside a clinical research trial. Although the results of an audit are not as valid and robust as those published from a randomised controlled trial, the number of participants is greater and it is more of a true reflection of real-life practice.

Overall, results demonstrate that national implementation of the X-PERT Programmes in the prevention and management of diabetes and obesity equips people with the skills to make informed decisions and take control of their condition, leading to improved health.

The audit will continue to be repeated annually. However, as group sessions have now been curtailed due to COVID-19 and structured education is being delivered remotely, there may be new challenges in keeping participants engaged and we strongly encourage educators to continue auditing implementation so that we can determine the impact of remote delivery and benchmark outcomes against audit standards.

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