X-PERT National Results
May 2013

Trudi Deakin

- AUDIT STANDARDS
- ALL CENTRES MEAN
- ORGANISATION COMPARISON
- NATIONAL AWARDS
- NEW DATABASE

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Introduction

Patient-centred care is one of the central pillars of the Diabetes National Service Framework (NSF) (DH 2001; DH 2003). People living with diabetes have a crucial role in managing their condition on a day-to-day basis, so supporting self-care should be central to any local diabetes service (NICE 2008). The Government’s plans for reform across the NHS, public health and adult social care are designed to enable services to deliver improved outcomes. The July 2010 White Paper (DH 2010) explained that an NHS Outcomes Framework would be developed to provide that national level accountability for the outcomes that the NHS delivers. The NHS Outcomes Framework 2012/13 (DH 2011) has now been published. Domain 2 “Ensuring quality of life for people with long-term conditions” will measure the proportion of people who feel supported to manage their condition.

X-PERT Diabetes is a structured education/self-management programme that meets the key criteria (DH/Diabetes UK 2006) to implement NICE Guidance (NICE 2008). It has been shown to be effective in improving health and quality of life outcomes in people with newly diagnosed and in people with existing diabetes both in a randomised controlled trial and in routine national implementation (Deakin et al, 2006 & 2011). The cost effectiveness of diabetes self-management programmes has been investigated and X-PERT was shown to be the most cost effective programme with 1 QALY gained costing less than €20,000 (Jacobs-Van Der Bruggen, 2009). The 2011 X-PERT Audit of 16,031 participants demonstrated that national implementation of the X-PERT Diabetes Programme could result in a cost saving to the NHS of £367 million per annum (Deakin 2011).

Audit of the programme is one of the key criterion in the implementation of structured diabetes education. The X-PERT audit database was developed so that organisations can audit X-PERT implementation against standards and national targets and compare their effectiveness to the all centres mean. It is crucial to assess whether implementation of X-PERT Diabetes results in the improvement to health and wellbeing that was seen in the published clinical trial.
The NHS Reforms have resulted in many merges and it is a time of change. Seventy-nine organisations are registered on the national X-PERT audit database. From 1st April 2011 to 31st March 2013, 58 organisations (73%) have entered attendance data, 49 organisations (62%) participant satisfaction data and 46 organisations (58%) participant empowerment data. However, only 15 organisations (19%) have entered sufficient data to be included in any of the clinical audit parameters. Implementation of the X-PERT Programmes enable English/Welsh organisations to obtain 14 QOF points (directly) and 74 QOF points (indirectly) and meet the objectives of the NHS Outcomes Framework 2013/14 and the NICE Quality Standard for adults with diabetes, especially structured education (standard 1), nutrition and physical activity (standard 2) and care planning (standard 3).

**Audit standards**

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

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Audit standard from RCT</th>
<th>Audit standard from national target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants</td>
<td></td>
<td>Structured education should be offered to every person and/or their carer at diagnosis, with annual reinforcement and review. Over 3 years = ~5,000 existing + ~500 new diagnosed.</td>
</tr>
<tr>
<td>Participant attendance</td>
<td>≥ 95% attend at least one session</td>
<td>People with diabetes receive a structured educational programme that fulfils the nationally agreed criteria from the time of diagnosis, with annual review and access to ongoing education.</td>
</tr>
<tr>
<td></td>
<td>≥ 80% attend 4 or more sessions</td>
<td></td>
</tr>
<tr>
<td>Participant satisfaction</td>
<td>≥ 90%</td>
<td>NHS Outcomes Framework “proportion of people who feel supported to manage their condition”.</td>
</tr>
<tr>
<td><strong>Participant empowerment</strong></td>
<td><strong>≥ 10% increase from baseline (6 weeks) and ≥ 20% at 1 year.</strong></td>
<td><strong>Standard 3, Diabetes National Service Framework 2001 Standard 3 (care planning), NICE Quality Standard for adults with diabetes.</strong></td>
</tr>
<tr>
<td><strong>Glycated haemoglobin</strong></td>
<td><strong>≥ 0.5% reduction</strong></td>
<td><strong>7% (individual variation between 6.5% and 7.5%)</strong></td>
</tr>
<tr>
<td><strong>Body weight / BMI</strong></td>
<td><strong>No increase</strong></td>
<td><strong>5-10% weight loss BMI reduced from obese to overweight (≤ 29.9 kg/m^2) or normal weight (≤ 24.9 kg/m^2)</strong></td>
</tr>
<tr>
<td><strong>Waist circumference</strong></td>
<td><strong>≥ 2 cm reduction</strong></td>
<td><strong>&lt; 80 cm females &lt; 94 cm males</strong></td>
</tr>
<tr>
<td><strong>Systolic blood pressure</strong></td>
<td><strong>≤ 5 mmHg reduction (if relevant)</strong></td>
<td><strong>&lt; 130 mmHg Type 1 and Type 2 with microvascular complications &lt; 140 mmHg Type 2 (no complications)</strong></td>
</tr>
<tr>
<td><strong>Diastolic blood pressure</strong></td>
<td><strong>---</strong></td>
<td><strong>&lt; 80 mmHg</strong></td>
</tr>
<tr>
<td><strong>Total cholesterol</strong></td>
<td><strong>---</strong></td>
<td><strong>&lt; 4.0 mmol/l</strong></td>
</tr>
<tr>
<td><strong>LDL cholesterol</strong></td>
<td><strong>---</strong></td>
<td><strong>&lt; 2.0 mmol/l</strong></td>
</tr>
<tr>
<td><strong>HDL cholesterol</strong></td>
<td><strong>---</strong></td>
<td><strong>≥ 1.2 mmol/l females ≥ 1.0 mmol/l males</strong></td>
</tr>
<tr>
<td><strong>Triglycerides</strong></td>
<td><strong>---</strong></td>
<td><strong>&lt; 1.7 mmol/l</strong></td>
</tr>
<tr>
<td><strong>Prescribed medication</strong></td>
<td><strong>50% of participants will have either reduced diabetes medication or have remained on the same dose.</strong></td>
<td><strong>---</strong></td>
</tr>
</tbody>
</table>
Mean “all centres” results

The all centres report changes almost on a daily basis as organisations enter data but the main outcome of the results has remained consistent for several years. All audit standards from the RCT have been met.

### X-PERT Programmes Report: All Localities - May 2013

<table>
<thead>
<tr>
<th></th>
<th>4314</th>
<th>11.4 (95%)</th>
<th>35,123</th>
<th>8.1</th>
<th>95.6%</th>
<th>81.4%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of X-PERT programmes run in this period:</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Percentage program evaluation score (4-12):</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of attendees:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean number of attendees per programme:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total percentage who attended 1 session:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total percentage who attended &gt;= 4 sessions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attended Annual Update Module:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2691 (7.7%)</th>
<th>6 Weeks:</th>
<th>1 Year:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Empowerment Score (1-5):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient Empowerment Score % Change:</td>
<td></td>
<td>22.9%</td>
<td>22.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>6 Months Post Course</th>
<th>1 Year Post Course</th>
<th>2 Year Post Course</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean HbA1c (mmol/mol)</td>
<td>61</td>
<td>54.5</td>
<td>55</td>
<td>54.6</td>
</tr>
<tr>
<td>Patients with Valid HbA1c (n)</td>
<td>27612</td>
<td>6397</td>
<td>5626</td>
<td>884</td>
</tr>
<tr>
<td>Mean Weight (Kg)</td>
<td>89.8</td>
<td>87.9</td>
<td>86.1</td>
<td>88.6</td>
</tr>
<tr>
<td>Patients with Valid Weight (n)</td>
<td>27122</td>
<td>4825</td>
<td>4253</td>
<td>741</td>
</tr>
<tr>
<td>Mean BMI (Kg/m2)</td>
<td>32</td>
<td>31.2</td>
<td>30.9</td>
<td>31.3</td>
</tr>
<tr>
<td>Patients with Valid BMI (n)</td>
<td>26657</td>
<td>4448</td>
<td>4171</td>
<td>736</td>
</tr>
<tr>
<td>Blood Pressure Systolic (mmHg)</td>
<td>133.8</td>
<td>133</td>
<td>132</td>
<td>133</td>
</tr>
<tr>
<td>Patients with Valid BP Systolic (n)</td>
<td>25427</td>
<td>4511</td>
<td>3991</td>
<td>663</td>
</tr>
<tr>
<td>Blood Pressure Diastolic (mmHg)</td>
<td>77.5</td>
<td>76</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>No patients with valid BP Diastolic</td>
<td>25379</td>
<td>4507</td>
<td>3978</td>
<td>663</td>
</tr>
<tr>
<td>Mean Waist Circumference (cm)</td>
<td>103.9</td>
<td>101.6</td>
<td>101.4</td>
<td>103.1</td>
</tr>
<tr>
<td>Patients with valid Waist (n)</td>
<td>13799</td>
<td>1720</td>
<td>1678</td>
<td>239</td>
</tr>
<tr>
<td>Mean Total Cholesterol (mmol/l)</td>
<td>4.5</td>
<td>4.2</td>
<td>4.2</td>
<td>4.1</td>
</tr>
<tr>
<td>Patients with Valid Cholesterol (n)</td>
<td>28194</td>
<td>5706</td>
<td>5343</td>
<td>848</td>
</tr>
</tbody>
</table>
### Mean LDL Cholesterol (mmol/l)

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5</td>
</tr>
<tr>
<td>2.3</td>
</tr>
<tr>
<td>2.2</td>
</tr>
<tr>
<td>2.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patients with Valid LDL (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20843 4592 3886 688</td>
</tr>
</tbody>
</table>

### Mean HDL Cholesterol (mmol/l)

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3</td>
</tr>
<tr>
<td>1.3</td>
</tr>
<tr>
<td>1.3</td>
</tr>
<tr>
<td>1.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patients with Valid HDL (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25827 5343 4789 778</td>
</tr>
</tbody>
</table>

### Mean Triglycerides (mmol/l)

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.9</td>
</tr>
<tr>
<td>1.7</td>
</tr>
<tr>
<td>1.7</td>
</tr>
<tr>
<td>1.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patients with Valid Triglycerides (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23020 4811 4111 775</td>
</tr>
</tbody>
</table>

### Comparison of individual organisation outcomes

The mean value for each outcome has been compared between organisations. Mean values were only included if there were data for 10% or more of the participants captured at baseline or data for more than 20 participants. The results for each clinical outcome at 6 months and 12 months post-course are presented in a bar chart. Each **blue** bar represents an organisation at baseline and the corresponding **red** bar represents the follow-up data. The target for each outcome is demonstrated with a **purple** line and the change from baseline demonstrated with a **green** line with the axis on the left-hand side.

### Number of participants
The graph above presents the number of participants per organisation who have attended the X-PERT Diabetes Programme between 1\textsuperscript{st} April 2011 and 31\textsuperscript{st} March 2013 \textit{and have had their outcomes entered onto the audit database}. Twenty-one organisations have not entered any participants’ data. The smallest amount of data has been entered by organisation 22. \textbf{Worcestershire Acute Hospitals NHS Trust} has entered the largest number of records i.e. 1,228 participant records.

\textbf{Participant attendance}
The mean all centre attendance score (percentage of X-PERT participants who have attended four or more sessions) is 81.4%. The audit standard derived from the clinical trial is 80% (purple line in the graph above). Fifty-seven organisations (72%) entered attendance data and 42 organisations (74%) obtained a mean attendance score equal to or above the audit standard. **Castle Medical Group** achieved the best results with a mean participant attendance score of 100%.

**Participant satisfaction**

![Graph showing participant satisfaction](image)

At 6 weeks the mean all centre X-PERT participant satisfaction score is 95%. The audit standard is 90% (purple line in the graph above). Forty-six organisations (94% of organisations) achieved the audit standard for participant satisfaction (organisations 5 to 47). **HSE South (SH area)** and **NHS Lanarkshire** achieved the best results with a mean participant satisfaction score of 100%. 
At 6 weeks the mean *all centre* change in the X-PERT participant empowerment score is 22.9%. The clinical trial demonstrated a 24% increase in participant empowerment at 6 weeks. The audit standard for implementation has been set at 10% (see purple line above). Forty-two organisations (93% of organisations) achieved the audit standard for empowerment. **Lancashire Care NHS Foundation Trust** achieved the best results with an increase in the mean participant empowerment score of 95.8%. 

*Participant empowerment*
**Glycated haemoglobin (HbA1c)**

At 6 months the mean *all centre* reduction in glycated haemoglobin for X-PERT participants is 6.4 mmol/mol (from 61 mmol/mol to 54.5 mmol/mol). The clinical trial demonstrated a 4 mmol/mol improvement in glycated haemoglobin at four months. The six month audit standard is a reduction in HbA1c of 4 mmol/mol. The mean target for HbA1c is 53 mmol/mol to capture individual targets between 48 mmol/mol and 58 mmol/mol (purple line in the graph below). Only 15 (19% of organisations) have entered sufficient data, 11 of which (73%) achieved the audit standard. **Medway Community Healthcare** achieved the best results with a mean reduction of 11.1 mmol/mol.
At 12 months the mean *all centre* reduction in glycated haemoglobin for X-PERT participants is 6 mmol/mol (from 61 to 55). The clinical trial demonstrated a 8 mmol/mol improvement in glycated haemoglobin at 12 months. The 12 month audit standard is a reduction in HbA1c of 5 mmol/mol. The mean target for HbA1c is 53 mmol/mol (purple line in the graph below) to capture individual targets between 48 mmol/mol and 58 mmol/mol. Only 8 organisations have recorded sufficient data. All organisations demonstrated a mean reduction in HbA1c (green line and axis on the right side in the graph below). Six organisations (75%) achieved the audit standard for glycated haemoglobin. **Medway Community Healthcare** achieved the best results with a mean reduction of 12.1 mmol/mol.
**Body weight**

At 6 months the mean *all centre* reduction in body weight for X-PERT participants is 1.9Kg (from 89.8Kg to 87.9Kg) resulting in 2% weight loss. The clinical trial demonstrated a 0.3kg reduction in body weight at 4 months. Recognising that adults (with and without diabetes) tend to gain weight year on year and that insulin resistant people with diabetes find it harder to lose weight, the 6 month audit standard is weight maintenance. Only 12 organisations have entered sufficient data and 10 organisations (83%) met the audit standard with 9 (75%) demonstrating a mean weight reduction (green line and axis on the right side in the graph below). **Lancashire Care NHS Foundation Trust** achieved the best results with a mean weight loss of 8% i.e. 7.5Kg (from 88.5Kg to 81Kg).
At 12 months the mean *all centre* reduction in body weight for X-PERT participants is 3.7Kg (from 89.8Kg to 86.1Kg). The clinical trial demonstrated a 0.5kg reduction in body weight at 12 months. The 12 month audit standard is weight maintenance for the reasons stated above. Only 7 organisations have entered sufficient data and 5 of these (71%) demonstrated a mean weight reduction (green line and axis on the right side in the graph below). **Isle of Wight PCT** achieved the best results with a mean weight loss of 9% (8.1Kg) (from 85.9Kg to 77.8Kg).
Body Mass Index (BMI)

At 6 months the mean *all centre* reduction in BMI for X-PERT participants is 0.8 Kg/m² (from 32 Kg/m² to 31.2 Kg/m²). It has been recognised that losing 5% to 10% of body weight can result in significant health benefits. Target lines of <BMI 25 and <BMI 30 have been inserted into the graph below. Only 12 organisations entered sufficient data. At baseline 92% of organisations had a mean BMI in the obese range (≥30 Kg/m²) and this reduced to 75% of organisations at 6 months. Nine organisations (75%) demonstrated a mean reduction in BMI (green line and axis on the right side in the graph below). South Essex Partnership University NHS Foundation Trust (SEPT) achieved the best results with a mean reduction of 2.1 Kg/m² (from 32 Kg/m² to 29.9 Kg/m²).
At 12 months the mean all centre reduction in BMI for X-PERT participants is 1.1 Kg/m² (from 32 Kg/m² to 30.9 Kg/m²). Only 7 organisations entered sufficient data and 6 organisations (86%) demonstrated a mean reduction in BMI (green line and axis on the right side in the graph below). Isle of Wight PCT and Flintshire (Betsi Cadwaladr UHB) achieved the best results with a mean reduction of 2.1 Kg/m² (from 29.8 Kg/m² to 27.7 Kg/m² and 33.1 Kg/m² to 31 Kg/m² respectively).
Waist circumference

At 6 months the mean all centre reduction in waist circumference for X-PERT participants is 2.3cm (from 103.9cm to 101.6cm). Carrying excess fat around the waist has been shown to risk insulin resistance and be one of the risk factors for cardiovascular disease. The recommended waist circumference of a female is ≤ 80 cm and for males, ≤94 cm. The graphs below demonstrate that the majority of participants have waist circumferences above the ideal range. Only 5 organisations entered sufficient data and 4 (80%) of these met the audit standard of 2cm reduction moving towards the healthy range (green line and axis on the right side in the graph below). Lancashire Care NHS Foundation Trust achieved the best results with a mean reduction of 8cm (from 105cm to 97cm).
At 12 months the mean *all centre* reduction in waist circumference for X-PERT participants is 2.5cm (from 103.9cm to 101.4cm). Only 3 organisations entered sufficient data. Two organisations (67%) demonstrated a mean reduction in waist circumference moving towards the healthy range (green line and axis on the right side in the graph below). *Isle of Wight PCT* achieved the best results with a mean reduction of 6.3cm (from 99.9cm to 93.6cm).
Systolic blood pressure

At 6 months the mean *all centre* reduction in systolic blood pressure for X-PERT participants is 0.8 mmHg (from 133.8 mmHg to 133 mmHg). The recommended systolic blood pressure for an individual with Type 2 diabetes with no microvascular complications is ≤ 140 mmHg (turquoise target line in the graph below) and the recommendation for Type 1 diabetes and for those with retinopathy or nephropathy is ≤ 130 mmHg (purple target line). The baseline figures demonstrate that all organisations have mean systolic blood pressure readings below the 140 mmHg target. Only 12 entered sufficient data and 9 (75%) demonstrated a further reduction (green line in the graph below) moving towards the 130 mmHg target. **Wrexham (Betsi Cadwaladr UHB)** achieved the best results with a mean reduction of 5.8 mmHg (from 130.8 mmHg to 132 mmHg).
At 12 months the mean *all centre* reduction in systolic blood pressure for X-PERT participants is 1.8 mmHg (from 133.8mmHg to 132mmHg). Only 7 organisations entered sufficient data with 4 (57%) demonstrating a further mean reduction in systolic blood pressure (green line in the graph below) moving towards the 130 mmHg target. *Bexley Care Trust* achieved the best results with a mean reduction of 4.2mmHg (from 135.2 mmHg to 131 mmHg).
**Diastolic blood pressure**

At 6 months the mean *all centre* reduction in diastolic blood pressure for X-PERT participants is 1.5 mmHg (from 77.5 to 76 mmHg). The recommended diastolic blood pressure for people with diabetes is ≤ 80 mmHg (purple target line in the graph below). The baseline figures demonstrate that all the organisations have mean diastolic blood pressure readings below the 80 mmHg target. Only 12 organisations entered sufficient data and 11 of these demonstrated a further mean reduction in diastolic blood pressure from 0.5 mmHg to 5.1 mmHg (green line in the graph below). **Liverpool Community Health** achieved the best results with a mean reduction of 5.1 mmHg (from 77.1 mmHg to 72 mmHg).
At 12 months the mean *all centre* reduction in diastolic blood pressure for X-PERT participants is 2.5 mmHg (from 77.5 to 75 mmHg). Only 7 organisations entered sufficient data and 6 of these (86%) demonstrated a mean reduction in diastolic blood pressure from 1.7 mmHg to 5.5 mmHg (green line in the graph below).

**Lancashire Care NHS Foundation Trust** achieved the best results with a mean reduction of 5.5 mmHg (from 75.5 mmHg to 70 mmHg).
**Total cholesterol**

At 6 months the mean *all centre* reduction in total cholesterol for X-PERT participants is 0.3 mmol/l (from 4.5 mmol/l to 4.2 mmol/l). The recommended total cholesterol reading for adults with diabetes is < 4 mmol/l. Only 15 organisations entered sufficient data with 13 organisations (87%) demonstrating a mean reduction in total cholesterol of between 0.1 mmol/l and 0.5 mmol/l (green line and axis on the right side in the graph below) which represented a 2 to 11% reduction. **South Essex Partnership University NHS Foundation Trust (SEPT)** achieved the best results with a mean reduction of 0.5 mmol/l (from 4.6 mmol/l to 4.1 mmol/l).
At 12 months the mean all centre reduction in total cholesterol for X-PERT participants is 0.3 mmol/l (from 4.5 mmol/l to 4.2 mmol/l). Only 10 organisations entered sufficient data and 9 demonstrated a reduction of between 0.1 mmol/l and 0.8 mmol/l (green line and axis on the right side in the graph below) and 5 organisations (50%) achieved a 5% to 15% reduction. Newport (Aneurin Bevan HB) achieved the best results with a mean reduction of 0.8 mmol/l (from 5.4 mmol/l to 4.6 mmol/l) (15% reduction from baseline).
**LDL cholesterol**

At 6 months the mean *all centre* reduction in LDL cholesterol for X-PERT participants is 0.2 mmol/l (from 2.5 mmol/l to 2.3 mmol/l). The recommended LDL cholesterol reading for adults with diabetes is < 2 mmol/l. The graphs below demonstrate that the majority of participants have LDL cholesterol values above the ideal range. Only 14 organisations entered sufficient data with 100% of them demonstrating a reduction in LDL levels from 0.1 mmol/l to 1.2 mmol/l (green line and axis on the right side in the graph below) reflecting a 4 to 34% reduction. **Lancashire Care NHS Foundation Trust** achieved the best results with a mean reduction of 1.2 mmol/l (from 3.5 mmol/l to 2.3 mmol/l). 

![Graph showing LDL cholesterol change from baseline to 6 months](image)
At 12 months the mean *all centre* reduction in LDL cholesterol for X-PERT participants is 0.3 mmol/l (from 2.5 mmol/l to 2.2 mmol/l). Only 10 organisations entered data with 8 organisations (80%) demonstrating a mean reduction in LDL cholesterol of between 0.1 mmol/l and 1.1 mmol/l (green line and axis on the right side in the graph below) reflecting a mean reduction between 4% to 31%. *Lancashire Care NHS Foundation Trust* achieved the best results with a mean reduction of 1.1 mmol/l (from 3.5 mmol/l to 2.4 mmol/l) [31% reduction].
HDL cholesterol

At 6 months the mean all centre HDL cholesterol value stayed the same at 1.3 mmol/l. The recommended HDL cholesterol reading for females with diabetes is ≥ 1.2 mmol/l and the recommendation for males is ≥ 1.0 mmol/l. Only 15 organisations entered sufficient data. The graphs below demonstrate that at baseline, all the organisations (100%) report mean HDL cholesterol levels ≥ 1.0 mmol/l. However, at 6 months, 3 organisations (20%) demonstrated a mean increase in HDL cholesterol of 0.1 mmol/l to 0.3 mmol/l (green line and axis on the right-hand side in the graph below). Bexley Care Trust achieved the best results with a mean increase of 0.3 mmol/l (from 1.2 mmol/l to 1.5 mmol/l).
At 12 months the mean all centre increase in HDL cholesterol value stayed the same at 1.3 mmol/l. Only 10 organisations entered sufficient data. Three organisations (30%) demonstrated a mean increase in HDL cholesterol of 0.1 mmol/l to 0.3 mmol/l (green line and axis on the right-hand side in the graph below). **Bexley Care Trust** achieved the best results with a mean increase of 0.3 mmol/l (from 1.2 mmol/l to 1.5 mmol/l).
Triglycerides

At 6 months the mean *all centre* reduction in triglyceride cholesterol for X-PERT participants is 0.2 mmol/l (from 1.9 mmol/l to 1.7 mmol/l). The recommended triglyceride cholesterol reading for adults with diabetes is < 1.7 mmol/l. Only 15 organisations entered sufficient data. The graph below demonstrate that 12 organisations (75%) report mean triglycerides cholesterol values above the ideal range at baseline. However, at 6 months, 10 organisations (67%) demonstrated a mean reduction in triglycerides cholesterol of between 0.1 mmol/l and 0.7 mmol/l [6% to 32% mean reduction] (green line and axis on the right-hand side in the graph below) and 10 organisations (67%) achieved a mean total cholesterol value of ≤ 1.7 mmol/l. **Wrexham (Betsi Cadwaladr UHB)** achieved the best results with a mean reduction of 0.7 mmol/l (from 2.2 mmol/l to 1.5 mmol/l).
At 12 months the mean all centre reduction in triglyceride cholesterol for X-PERT participants is 0.2 mmol/l (from 1.9 mmol/l to 1.7 mmol/l). Only 10 organisations entered sufficient data of which 7 (70%) demonstrated a mean reduction in triglycerides cholesterol of between 0.1 mmol/l and 0.6 mmol/l [8% to 26% reduction] (green line and axis on the right-hand side in the graph below) and 6 organisations (60%) achieved a mean triglyceride cholesterol value of ≤ 1.7 mmol/l. Flintshire (Betsi Cadwaladr UHB) achieved the best results with a mean reduction of 0.6 mmol/l (from 2.3 mmol/l to 1.7 mmol/l).
Discussion

Strengths

The evidence base of the success of the X-PERT Programme has already been established and 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 is the biggest audit undertaken on structured education for Type 2 diabetes. The results are extremely positive demonstrating that implementation of the X-PERT Diabetes Programme continues to be as effective as it was in clinical trial. All audit standards have been met for the all centre data and there is movement towards national targets. All organisations are demonstrating an improvement in glycaemic control and the majority are also demonstrating clinically meaningful improvements to body weight, blood pressure and lipid outcomes by 12 months.

Limitations

On-going audit does not have the same meticulous rules and regulations as collecting data in a randomised controlled trial. The latter is collected within a specific pre-determined timescale and due care and attention ensures that data is collected from all participants by researchers blinded to the intervention/control groups.

Audit is therefore much more pragmatic and easier to implement but is more open to bias. Some organisations have only entered baseline results and therefore no comparative analysis can be undertaken for clinical outcomes. Other organisations have not entered enough 6 month or 12 month follow-up data. This can skew the results as one is not comparing the same cohort of individuals at baseline and at follow-up. Data was discounted from the audit report if less than 20 inputs or less than 10% of baseline had been entered for any one outcome. The majority of organisations have entered insufficient data between 1st April 2011 and 31st March 2013. Thus, some organisations are doing exceptionally well whilst others are struggling with either inputting the data or with the results of particular outcomes. It is advisable for some organisations to scrutinise their results to ascertain whether they are less favourable because of the small sample sizes at
follow-up or because of the actual implementation. It is hoped that this audit report will help to identify priorities for continuous quality improvement within organisations and X-PERT Health are happy to help and assist you in this process.

**The new audit database**

The new database adds value by being participant-centric. Therefore organisational changes as a result of the NHS restructure have not caused a problem. Some of the new functions are listed below:

- Conversion of HbA1c from percentage (%) to mmol/mol
- Capture and report on ethnicity
- Capture and report on prescribed medication such as diabetes, lipid, blood pressure and anticoagulant
- Capture and report on time living with diabetes
- Capture whether implemented with one or two educators and comparison report
- Capture and report on quality assurance assessments
- Inputting using the NHS number but encrypted for data protection and confidentiality.

**Annual awards**

The X-PERT Health annual awards, launched last year, recognise those organisations with the best audit results for the following 6 outcomes during the period 1\textsuperscript{st} April 2011 and 31\textsuperscript{st} March 2013:

- Greatest number of participants to attend X-PERT in the previous year
- The best participant attendance score
- The highest participant empowerment and satisfaction score
- The biggest improvement in glycated haemoglobin
- The largest impact on body weight and waist circumference
- The greatest improvement in cardiovascular disease risk factors (lipids and BP)
Due to the current financial constraints within the NHS and feedback from Educators it is appreciated that it may be difficult for Educators to obtain the time and travel expenses to attend an Awards Ceremony. Certificates will therefore be mailed to the following successful organisations.

1) Greatest number of participants to attend X-PERT

The following criteria were taken into consideration: number of attendees; number of programmes; mean number of attendees per programme.

The winner is: Worcestershire Acute Hospitals NHS Trust

2nd Place - Medway Community Healthcare

3rd Place - Bexley Care Trust

2) The best participant attendance score

The following criteria were taken into consideration: attendance at least one session; attendance at four or more sessions; number of participants per session.

The winner is: Castle Medical Group

2nd Place - Bexley Care Trust

3rd Place - Leeds Community Healthcare NHS Trust

3) The highest participant empowerment and satisfaction score

The following criteria were taken into consideration: increase in empowerment at 6 weeks; increase in empowerment at 12 months; participant satisfaction score.

The winner is: HSE South (SH area)

2nd Place - Anglian Community CIC

3rd Place - Lancashire Care NHS Foundation Trust
4) The greatest improvement in glycated haemoglobin

The following criteria were taken into consideration: HbA1c reduction at 6 months; HbA1c reduction at 12 months; number and percentage of participants’ data collected at baseline, 6 and 12 months.

The winner is: Medway Community Healthcare

2nd place - Bexley Care Trust

3rd place - Harrow NHS

5) The largest impact on body weight and waist circumference

The following criteria were taken into consideration: body weight, BMI and waist circumference reduction at six and 12 months; number and percentage of participants’ data collected at baseline, 6 and 12 months.

The winner is: Lancashire Care NHS Foundation Trust

2nd place - Isle of Wight PCT

3rd place - South Essex Partnership University NHS Foundation Trust (SEPT)

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

The following criteria were taken into consideration: improvement in lipid profile at 6 and 12 months; improvement in blood pressure at 6 and 12 months; number and percentage of participants’ data collected at baseline, 6 and 12 months.

The winner is: Bexley Care Trust

2nd place - Lancashire Care NHS Foundation Trust

3rd place - Barts Community Health
Conclusion

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. All audit standards have been met for the all centre data. This demonstrates that national implementation of X-PERT Education equips people with diabetes with the skills to take control and self-care for their condition leading to improved health and quality of life. The different categories of awards will be announced every year. X-PERT is happy to advise and support organisations in achieving audit standards and improving key performance indicators. Attending X-PERT Educator Update Conferences will help to share good practice to further drive quality improvement.
References

- National Institute for Health And Clinical Excellence (NICE). Quality Standards Programme: Diabetes in Adults. NICE Centre For Clinical Practice March 2011 [accessed 26/01/12 at: http://www.nice.org.uk/media/FCF/87/DiabetesInAdultsQualityStandard.pdf]