

Changing the Physical Activity Landscape



County Durham Sport and

NHS County Durham

Progress Report: Return on Investment for CPAL

January 2012

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The logo features a stylized red 'H' composed of three overlapping, slightly offset shapes. Below this, the word 'Helmepark' is written in a large, black, sans-serif font. Underneath the name, the tagline 'people, partnerships, performance' is written in a smaller, black, sans-serif font.

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Progress Report: Return on Investment for CPAL

Foreword by NHS County Durham

CPAL is a large scale investment by NHS County Durham, managed on our behalf by County Durham Sport, with a primary outcome of encouraging adults aged 40 – 74 years of age with an estimated or actual risk of CVD greater than 20% to increase their levels of physical activity.

It is currently about half way through its delivery cycle and is well on track in terms of its principle targets, with 6710 people having been recruited to date, including 3424 from the core CVD group.

Most importantly 1791 of these individuals, including 958 from the CVD group, have already been shown to have increased their levels of physical activity six months after starting on the programme – and increased levels of physical activity reduce CVD risk and bring financial benefits to the NHS and to society as a whole.

Clearly this does not mean that the CVD risk of everyone taking part falls to zero and we have been working closely with County Durham Sport and HelmePark Limited, the independent evaluators for the project, to develop a realistic model. This has enabled us to derive an economic return on investment, comparing the expected benefits in terms of CVD reduction against the NHS investment.

As with any model a series of assumptions have had to be made, but we have ensured these are clearly spelt out in the report, and overall we consider the approach is well balanced. We have also maintained our focus on CVD, as the initial driver for the project, although there are benefits which can be expected under other headings, for example Type 2 Diabetes.

We are therefore extremely encouraged that, even with this narrow CVD focus, the emerging evidence is that a positive return on investment is already being achieved and this can be expected to improve further as the programme continues.

While it should not become the sole measure, we consider this approach provides an important addition in terms of evaluating delivery and potentially informing future finding decisions, and would recommend its use elsewhere.

Anna Lynch

Director of Public Health, County Durham

Progress Report: Return on Investment for CPAL

Executive summary

This purpose of this report is to provide an update on a financial return on investment (ROI) model being developed for CPAL, which considers a tightly focused range of economic outcomes associated with CVD. The model uses key elements of a Social Return on Investment (SROI) methodology, providing a robust framework and ensuring that all assumptions are clearly identified.

The assumptions for CPAL are set out in the detailed notes to this report, together with an assessment of potential areas in these assumptions which might impact on the ROI either positively or negatively, and at a net level these effects appear to be broadly neutral overall.

Although by definition the economic figures are a best estimate, and should not be used in isolation in coming to an overall assessment of the impact of CPAL, the report concludes that the programme:

- Is already achieving a return to date of **£1.26 of benefits for each £1 invested**, based on a figure of £1.85 for those aged 40 -74 with a defined risk of CVD (the CVD group), £0.84 for the remaining participants aged over 40 and £0.42 for those under 40 years of age
- Has the potential by the programme end to achieve an overall return of **£2.63 for each £1 invested**, based on £3.62 for the CVD group, £2.47 for the remaining over 40 age group and £0.62 for the under 40 age group.

1. Introduction and purpose of the report

CPAL marks a large scale investment in an outcomes driven programme, which places a particular emphasis on encouraging adults aged 40 to 74 years of age with an estimated or actual risk of CVD greater than 20% to increase their levels of physical activity.

As part of the wider process of evaluating the delivery and impact of CPAL a model is being developed to place an estimated economic value on the outcomes being achieved by the programme, to enable a financial return on investment to be derived. A key part of the approach to this is the use of an established health sector protocol, the Stanford 7 day recall. This enables CPAL to report on the number of individuals who have increased their levels of physical activity six months after joining the programme.

This is particularly important in terms of the long term outcome of encouraging adults in the CVD group described above to increase their levels of physical activity and consequently reduce their CVD risk, which brings with it a range of associated economic benefits. However, the model will also provide an estimate of the economic value for CPAL from engaging with individuals outside this core group, who are expected to represent just under half of the overall total.

The economic model which is currently being developed identifies three economic outcomes based on reducing **public health costs** and reducing losses which result in other areas as a direct consequence, **production losses** and **informal care costs**. Production losses include headings such as lost taxes and reduced spending by individuals with CVD and informal care costs are associated with family members having to care for those with CVD.

The model then places a financial value on each of these economic outcomes and identifies the extent to which CPAL can claim to have a direct impact, using a number of elements of a Social Return on Investment methodology (SROI).

This report provides an interim position statement sharing the rationale behind the approach and setting out the emerging findings from the model, in order to allow for further debate and refinement before it is finalised. Further interim figures will then be provided on a quarterly basis as the programme develops, following any changes to the approach. It will also be used to provide a final economic return for CPAL which, based on a final cohort of participants being recruited by Sep 2012, is expected to be available shortly after the collection of the last six month data in March 2013.

2. Use of an SROI based approach

The use of an SROI based approach has been adopted because it:

- Provides a detailed and replicable framework, developed from previous Treasury Green Book approaches, increasingly being used in public and third sector economic impact modelling
- Ensures that all sources of data are attributed and that all assumptions are captured
- Leads to a simple investment ratio figure which can be used to inform future funding debates and decision making.

It is important to note that developing a full SROI is typically a relatively resource intensive approach, identifying outcomes from the perspective of all stakeholders and placing a financial value on each of these. Examples of this for CPAL might range from improved social and emotional wellbeing for participants to wider learning outcomes for commissioners and others. From a direct health perspective, an effect on Type 2 diabetes might also be expected in addition to the CVD outcomes.

This is beyond the scope of this study, given the range of outcomes which could be expected to be identified and the considerable challenge of identifying reliable direct or proxy indicators of financial value for each and every one of these outcomes. In addition, the more the outcomes are extended, the more the risk of overstatement which can be potentially levelled at the final figures.

The model developed therefore focuses on a small number of CVD outcomes for which it is considered reliable financial indicators can be identified. In this way it is using identified elements of SROI, rather than following the full methodology, and this is described as a legitimate approach in a paper prepared by New Philanthropy Capital on the use of SROI¹.

It is also important to emphasise that any financial information derived from the model should only be considered as part of the overall assessment of the programme, and not in isolation, alongside a range of other factors including:

- An analysis of progress against key performance indicators
- Quantitative and qualitative feedback from participants including surveys, focus groups and case studies
- Important wider learning, already starting to emerge from the programme as a result of the clear focus and the structured monitoring and evaluation which is taking place

¹ Social Return on Investment Position Paper, New Philanthropy Capital, April 2010, <http://www.philanthropycapital.org/download/default.aspx?id=1110>

- An additional employment economic effect, where it is currently calculated that 19 fte and 32 pte roles are being created or supported as a result of CPAL. Although time limited, in line with the project, this is a significant factor in the current economic and operational climate.

3. Key factors in the CPAL model

Table 1 sets out a detailed table which builds up the economic case for CPAL and Table 2 provides a series of explanatory notes setting out the evidence base which has been used and describing the assumptions which have been made. The overall case is built up by considering three groups in turn:

- The **CVD group**, of people aged 40 to 74 years of age with an estimated or actual risk of CVD greater than 20%
- An **over 40 group** consisting of all remaining participants over 40 years of age
- An **under 40 group** of all participants falling into this age group.

The numbers for the CVD group used in the model are taken directly from the returns from the projects. The numbers used in the second and third groups are based on the total of the *family* and *other* group figures (described in other reports) from the projects being reallocated by age, in order to enable an estimate to be made of expected CVD risk and consequent health care costs, and this is explained in note 3 to the table.

The current model includes a number of key factors and arguments which are fundamental to the approach and it is important to consider these in the event of any comparisons being drawn with other projects, which would need to demonstrate a similarly robust case. In essence, however, the *summary* argument set out in the model is as follows (with the *details* set out in Tables 1 and 2):

- There is a direct healthcare cost associated with treating CVD, so it is possible to say how much can be saved as a result of preventing someone developing CVD
- Increased physical activity is regularly cited as substantially reducing the risk of CVD, so if physical activity levels can be demonstrated to have increased an associated reduction in CVD levels can be expected to follow
- The CPAL programme is using a validated measure to track whether or not each individual taking part has increased their levels of physical activity, through the Stanford 7 day recall
- This enables the programme to reliably report the number of individuals increasing their levels of physical activity six months after first being recruited and hence to claim an appropriate direct contribution in terms of reducing health care costs
- An analysis of NICE costings, using five year care costs in line with NICE protocols, has been undertaken with the NHS County Durham Consultant in Public Health Medicine. This suggests that direct healthcare costs are of the order of £11,571 over a five year period, without inflation, for each person who develops CVD
- If individuals avoid CVD they can typically continue to contribute to society through taxation and spending and there is a direct calculation which can be made of this reduction to production losses, from the healthcare costs above. This comes to £6,647 over a five year period
- There is also a reduction in the requirement for informal care to be delivered by members of their family and again a direct calculation can be made of this, of £6,401 over a five year period

- This gives a total saving of £24,619 over five years for each person who can be prevented from developing CVD through increasing their physical activity, of which direct healthcare costs make up 47%.

By definition, as it is not based on what would be a prohibitive longitudinal study of at least a ten year duration, the CPAL model has to make some statistically based assumptions about the numbers of individuals on the programme who might have been expected to develop CVD, and the number expected to avoid developing CVD as a result of increasing their physical activity levels.

Taking the CVD group as an example, for every 100 people in this group **at least** 20 can be expected to develop CVD at some point in the next ten years, based on each individual having a greater than 20% risk. If this entire group then increase their physical activity levels to a sufficient extent, some 10 individuals might reasonably be expected not to go on to develop CVD, based on the assumptions set out in the model.

The approach however needs to reflect that some individuals might have decided to increase their physical activity independently without CPAL and/or be benefiting from taking part in existing programmes. These effects are termed deadweight and attribution in SROI terms, being gains that could have happened anyway or gains down to someone else, and an allowance for this has been included in the calculations – reducing the figures accordingly.

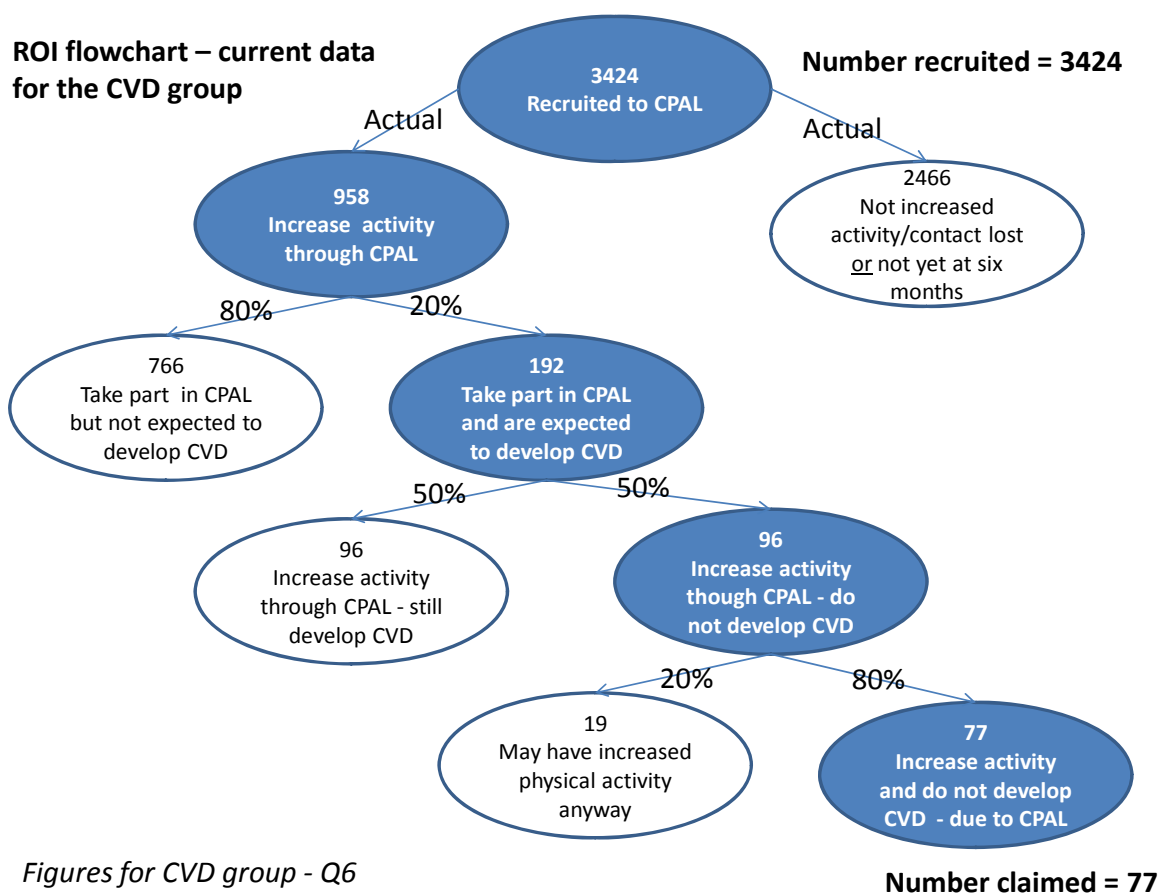
An SROI effect termed displacement has not however been included as its effect is considered to be negligible in this case. This is where a gain in one place leads to a loss elsewhere, for example if physical activity levels to reduce CVD resulted instead in high levels of injury leading to other health care costs and individuals taking time off work. The effect of this is expected to be minimal at the levels of physical activity typically being reported within CPAL.

Overall, the model suggests that for every **100 people in the CVD group increasing their physical activity levels** it is reasonable to claim that CPAL will have an impact on **reducing the incidence of CVD by 8 cases during the next ten years**.

For the remaining participants over 40 years of age, the equivalent reduction is around 4 cases per 100 people increasing their levels of physical activity, and 2 cases per 100 for the under 40 age group.

Figure 1 overleaf summarises this information as a flow chart using the current figures for the CVD group, where 3424 people have been recruited and 958 have increased their levels of physical activity, but only 77 people have been claimed once the various discounting factors have been taken into account.

Figure 1



5. Emerging economic findings

Based on the levels of direct CPAL investment to date², an analysis of the numbers of people recruited and an analysis of the numbers of people increasing their levels of physical activity after six months it is therefore possible to identify some early findings. For the project as a whole, noting the six month time lag in increased exercise levels which will only work through fully at the project end, this shows:

- A financial return of £2,399,882, against £1,999,079 currently invested, based on 6710 people overall having been recruited and 1791 with increased physical activity levels to date after six months
- A current **overall return of £1.26 of benefits for each £1 invested** to date, in turn based on
 - A return for the **CVD group of £1.85**, from 3424 people recruited and 958 to date increasing physical activity
 - A return for the remaining **over 40** participants of **£0.84**, from 822 recruited and 208 to date increasing physical activity

² This does not include any indicative in kind or direct contributions identified in submissions by individual projects, the value of which is not being audited as part of CPAL.

- A return for the **under 40** group of **£0.42**, from 2464 recruited and 625 to date increasing physical activity.

All three of these figures can be expected to improve as set up costs become more evenly distributed and the time lag between individuals starting on the programme and reporting on six month physical activity levels continues to work through, with both of these effects fully discounted by the project end.

If the project reaches its core targets, which have already almost been met in terms of recruitment and appear to be well on track for an overall target for at least 58% of participants to have increased levels of physical activity after six months, CPAL should therefore reach **at least** the levels indicated above as an overall outturn position.

If CPAL subsequently goes on to reach its added value targets, as looks increasingly realistic, it could potentially achieve an overall return of **£2.63 for each £1 invested**, based on £3.62 for the CVD group, £2.47 for the remaining over 40 participants and £0.62 for the under 40 age group.

Although direct benchmarking is not straightforward against other programmes, which typically have different drivers and data capture approaches, a detailed study of swimming has been identified which allows some useful initial indications to be drawn³. While the swimming approach includes an allowance for reducing Type 2 diabetes, which the CPAL model has not taken into account, it places a strong emphasis on reducing CVD through physical activity in reaching an investment figure of £1.50 of benefits for each £1 invested.

In conclusion therefore the current model, looking at a tightly focused range of economic outcomes linked to CVD, suggests that CPAL:

- Is already achieving a return to date of at least £1.26 of benefits for each £1 invested, based on £1.85 for the CVD group, £0.84 for the remaining over 40 participants and £0.42 for the under 40 group
- Has the potential by the programme end to achieve an overall return of £2.63 for each £1 invested, based on £3.62 for the CVD group, £2.47 for the remaining over 40 participants and £0.62 for the under 40 age group.

³ An estimate of the economic value and cost effectiveness of swimming in the community, Fordham Dr R, for the ASA, July 2010. Cited in Swimming - taking the plunge for a fitter lifestyle http://www.swimming.org/assets/uploads/library/00163ASA_Health_Strategy_full-version.pdf

Table 1: Provisional return on investment for CPAL to the end of Q6 (September 2011)												
Group	Economic outcomes ¹	Total number of participants recruited (to date)	Cost of project delivery (to date)	Financial proxy for outcomes			Apportionment				10 year return on investment (£)	
				Description	Source of evidence	Value (£)	Number of participants increasing exercise at 6 months (to date)	A Number expected to develop CVD without CPAL ³	B Number expected to develop CVD with CPAL ⁴	C Estimated number who might have joined other programmes or acted independently without CPAL ⁵		D Number claimed (A - B - C)
Participants over 40 years of age with an estimated or actual risk of CVD of greater than 20% - CVD group	Reduction in direct public health costs of CVD	3424	£1,020,096	Weighted average healthcare costs of a CVD event plus 5 years care and rehabilitation	NICE National costing report: Prevention of CVD June 2010 ¹ (47% of the total costs of CVD ²)	£11,571	958	192	96	19	77	£886,801.44
	Reduction in production losses - lost taxes, reduced spending etc by individuals with CVD			Associated production losses	BHF multiplier: 27% of total costs of CVD	£6,647						£509,439.13
	Reduction in informal care costs associated with family members caring for individuals with CVD			Associated informal care costs	BHF multiplier: 26% of total costs of CVD	£6,401						£490,571.01
					£24,619		Total return to date for CVD group				£1,886,811.57	
							Return on investment for CVD group				£1.85	
All other participants over 40 years of age	Reduction in direct public health costs of CVD	1870	£539,245	Weighted average healthcare costs of a CVD event and 5 years care and rehabilitation	As above	£11,571	459	46	23	5	18	£212,443.56
	Reduction in production losses - lost taxes, reduced spending etc by individuals with CVD			Associated production losses	As above	£6,647						£122,042.05
	Reduction in informal care costs associated with family members caring for individuals with CVD			Associated informal care costs	As above	£6,401						£117,521.97
					£24,619		Total return to date for over 40s non CVD				£452,007.57	
							Return on investment for over 40s non CVD				£0.84	
Participants under 40 years of age	Reduction in direct public health costs of CVD	1476	£439,738	Weighted average healthcare costs of a CVD event and 5 years care and rehabilitation	As above	£11,571	374	19	9	2	7	£86,551.08
	Reduction in production losses - lost taxes, reduced spending etc by individuals with CVD			Associated production losses	As above	£6,647						£49,720.83
	Reduction in informal care costs associated with family members caring for individuals with CVD			Associated informal care costs	As above	£6,401						£47,879.32
					£24,619		Total return to date for under 40s				£184,151.23	
							Return on investment for under 40s				£0.42	
Total all participants		6710	£1,999,079				1791					£2,522,970.38
												£1.26

Table 2: Basis for assumptions in the return on investment model

Heading	Basis for assumptions	Areas in assumptions which may impact on ROI and most likely direction of impact
1. Weighted average healthcare costs	<ul style="list-style-type: none"> The <i>NICE National Costing Report: Prevention of cardiovascular disease, June 2010</i> indicates that it is appropriate to add a hospital admission cost of CVD to ongoing care and rehabilitation costs to derive an NHS unit cost for CVD. The report provides a detailed table setting out a weighted average hospital admission cost of £4,614 but describes the ongoing costs as more difficult to estimate. It does however provide five year figures of £18,300 for stroke and £1,905 for myocardial infarction (MI). Using the proportions of types of CVD event in the admissions table, this equates to a five year care cost of £6,975 if angina and transient ischemic attacks (TIA) are costed at the lower of these rates. This gives a combined event plus care unit cost of £11,571 which has been developed with the NHS County Durham Consultant in Public Health Medicine and agreed as providing an appropriate basis for the CPAL model. Table 3 provides details of how this figure has been derived. This cost is then spread out over a ten year period in the model as the risk definition for the CVD group is that they have at least a 20% risk of developing CVD in the next ten years, i.e. an average of five years ongoing care and rehabilitation following a CVD event. http://www.nice.org.uk/nicemedia/live/13024/49325/49325.pdf 	<ul style="list-style-type: none"> This value is based on national averages and does not include any allowance for areas of high deprivation, where unit costs of healthcare are typically above average It treats all angina and TIA events at a lower care rate and does not allow for inflation Potential underestimate in the value of the ROI <i>Increasing figure increases ROI</i>
2. Ratio of direct healthcare costs of CVD to other costs	<ul style="list-style-type: none"> The <i>British Heart Foundation Statistics Website</i> cites evidence that the direct healthcare costs of CVD represent 47% of the total costs of CVD, with the balance made up by productivity (or production losses) at 27% and the informal care costs associated with CVD at 26%. http://www.bhf.org.uk/heart-health/statistics/economic-costs-of-cvd.aspx 	<ul style="list-style-type: none"> Any relative redistribution between healthcare, production losses and informal care will not impact on the overall ROI
3. Risk of developing CVD	<ul style="list-style-type: none"> CPAL was developed with a focus on the CVD group and uses trigger questions (or receives people on referral) which by definition indicates that these individuals have at least a 20% risk of developing CVD in the next ten years – i.e. many have a higher than 20% risk. By contrast no formal mechanism is in place to estimate the risk of the family group and other individuals on the programme. However, national data on the general incidence of CVD in the population as a whole shows that this rises from 3.2% (men) and 4.5% (women) in the 16 to 24 age group, to 5.6% (Men) and 7.8% (women) in the 35 to 44 age group. It then goes on to increase from 10.9% (Men) and 10.3 % (women) aged 45 to 55, rising ultimately to 44.4 % (men) and 36.9% (women) for those aged over 75. <i>Health Survey for England cited in CVD in England: Opportunities and challenges over the next ten years, BHF 2008.</i> Taking the age of 40 as a threshold, in line with the lower age limit for the CVD group, and 	<ul style="list-style-type: none"> The model is based on risk levels at the lower end in all three groups This is potentially most significant for the CVD group, leading to an underestimate in the numbers taking part in CPAL at risk of CVD and hence the numbers potentially benefiting

	<p>assuming that the local incidence (and hence risk) is in line with the national data, a figure of a 5% has been applied to family and other group members under 40 and a 10% figure to family and other group members over 40 – taking figures toward the lower end in each case.</p> <ul style="list-style-type: none"> • http://www.bhf.org.uk/cvc/pdf/CVC_10Years_2008_v2.pdf 	<ul style="list-style-type: none"> • Potential underestimate in the ROI <p><i>Increasing figure increases ROI</i></p>
<p>4. Effect of exercise on reducing CVD risk</p>	<ul style="list-style-type: none"> • Being more active is regularly cited as offering a 50% reduction in risk e.g. <i>At least five a week - evidence on the impact of physical activity and its relationship to health - a report from the Chief Medical Officer, DOH 2004.</i> • Although no common definition has been identified for the level of activity this equates to, individuals claimed by CPAL have increased their levels of moderate or higher level activity by at least one hour per week compared with their personal baseline • This is based on recording levels of moderate or higher levels of intensity against a defined activity scale on a periodic basis over six months. • One off increases in physical activity at six months or changes in light activity levels are disregarded as insufficient to impact on CVD. • Projects also remain in contact where possible with those who stop attending sessions up to six months to continue to gather 7 day recall data and encourage independent activity. • This period was set as a practical trade off in terms of balancing the detailed data collection by projects while providing emerging evidence of behaviour change by participants. • Although there is no direct evidence of the extent which this behaviour change is then maintained, the model is by definition already fully discounted over five years (note 1) i.e. it assumes 100% reversion to base levels by this time. • http://www.dh.gov.uk/dr_consum_dh/groups/dh_digitalassets/@dh/@en/documents/digitalasset/dh_4080981.pdf 	<ul style="list-style-type: none"> • The model assumes levels of increased exercise are sufficient to reduce risk and activity levels beyond 6 months remain adequate to maintain CVD protection. • However it treats all those where 6 month contact has not been achieved as not increasing exercise, which may not be the case • In addition CPAL may play a role in sustaining levels of activity for those reporting standstill figures, helping them remain more active in terms of the general population • Overall potential overestimate in the ROI? <p><i>Reducing figure reduces ROI</i></p>
<p>5. Number of individuals increasing levels of physical activity independently from CPAL</p>	<ul style="list-style-type: none"> • This is an estimate (combining deadweight and attribution in SROI terms) to reflect what might have happened anyway, due to individuals taking unsupported personal action and/or joining other programmes. • <i>Sport England Active People</i> data suggests that at most 23% of the population as a whole take part in Durham in what might be termed regular physical activity, and a figure of 20% has therefore been used as a relatively high end estimate to reflect the proportion of the participants who might have taken part in physical activity due to personal action and/or other programmes without CPAL. • http://www.sportengland.org/research/active_people_survey/active_people_survey_5/idoc.ashx?docid=e1353d60-6ba3-4288-80a0-71ee00e03a16&version=2 	<ul style="list-style-type: none"> • This is arguably a top end figure for the expected audience • Potential underestimate in the ROI <p><i>Reducing figure increase ROI</i></p>

Please note that this model has focused on a limited range of CVD outcomes linked to direct health costs, associated production costs and informal care costs using elements of the SROI approach. It does not claim to provide a full SROI approach and should not be treated as such.

Table 3: Weighted average hospital admission cost of a CVD event and five year NHS care and rehabilitation costs

Description	Proportion of total	Unit cost of event (hospital admission) £	Weighted average admission cost £	5 year NHS care and rehabilitation costs £	Weighted average five year care and rehabilitation costs £
Angina people over 60	18.62%	3,475	647	1,905	355
Angina people under 60	7.05%	1,475	104	1,905	134
MI without complications	25.36%	5,055	1,282	1,905	483
MI with complications	9.86%	11,459	1,130	1,905	188
TIA people aged over 60	6.16%	1,339	82	1,905	117
TIA people aged under 60	2.12%	1,339	28	1,905	40
Stroke people aged over 60	24.76%	4,348	1,077	18,300	4,531
Stroke people aged under 60	6.06%	4,348	263	18,300	1,109
Weighted average costs			4,614		6,957
Weighted average hospital admission costs plus five year costs of ongoing NHS care and rehabilitation					£11,571

1

2

3

4

Notes

All data in columns 1 - 3 is drawn directly from the NICE National Costing Report: Prevention of CVD, June 2010, as are the five years care costs for stroke (£18,300) and myocardial infarction (£1,905) in column 4. The figures shown in italics for angina and transient ischemic attacks in column 4 are based on treating these at the **lower** of these two rates and the final overall figure is therefore relatively cautious.