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# **Economic Value of Public Health Opportunities in Cheshire, Mersey & Alliance areas: A Rapid Review**

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0.1	09/06/2016	BC	Sarah Kinsella	Made some changes suggested by Sarah.

## 1. Introduction

This report aims to provide a rapid review of some opportunities to improve population health and save money in the Cheshire, Merseyside and West Lancashire areas. This is to aid decision making and making the case for prevention in local Sustainability and Transformation Plans (STPs) and for local devolution. This might include commissioning services on a bigger footprint or having policy interventions at a regional level. Some of the estimates in this report are based on quite broad, nationally produced estimates which could be made more precise with more rigorous analysis of local data, and including sensitivity analysis and modelling different perspectives and time horizons. Some of the activities in this report may already be happening in these areas, but could potentially be scaled up.

This report looks at some specific areas. These are;

- The demographic challenge and dementia
- Diabetes and obesity
- Hypertension
- Making Every Contact Count

In 2002 the Wanless Report said that the NHS would only survive in its current funding arrangements under a 'fully engaged' scenario where people take responsibility for their health. In terms of public health this may mean people eating well and exercising, and not smoking or using illicit drugs or consuming excess alcohol, or engaging in risky sexual behaviours. But even when people have healthy lifestyles, health inequalities between economically affluent and deprived groups persist. There is good evidence that policy and structural interventions may work better, be more efficient and have a bigger impact on inequalities than individual level interventions. However, successful prevention most likely requires a mixture of policy level, community level, and individual level interventions. Appendix 1 summarises a paper around NICE Public Health Guidance that has looked at the economics of prevention.

Box 1: Some examples of the cost of lifestyle behaviours and health issues

**Smoking (UK):** £13.7 billion ([Cough up: balancing tobacco income and costs in society](#))  
**Alcohol (England):** £20 billion ([Alcohol Harm Reduction Strategy for England](#))  
**Illicit Drug Use:** £15.4bn, of which £13.9 billion related to crime ([UK Focal Point on Drugs](#))  
**Being obese or overweight as a result of poor diet or inactivity (UK):** £7 billion ([Health – third report](#))  
**Physical inactivity:** £6.5 billion ([Start active, stay active: a report on physical activity from the four home countries' Chief Medical Officers](#)).  
**Stroke (England):** £7 billion a year. This comprises direct NHS costs of £2.8 billion (around £5.5 million per 100,000 population), £2.4 billion in informal care and £1.8 billion in lost productivity and disability  
**Diabetes (UK):** £8.4 billion a year (absenteeism from work); £6.9 billion a year (early retirement); £0.152 billion (social benefits); £13.75 billion (treatment). See [Cost of diabetes](#).

## 2. The Demographic Challenge

Most areas in the region are predicted to have a big increase in the population aged 85 and over, with Halton and St Helens showing a particularly high increase. This will mean an increase in health problems that affect older people like dementia and injuries due to falls. There is a simultaneous decline in the working age population which means fewer taxpayers to fund the NHS and social care. Many areas are also predicted to have a decrease in the 0-5s population.

Table 1: Estimated change in population, 2016-21.

Area	Total population	0-5	working age	65-84	85+
Cheshire West & Chester (2 CCG areas)	1.30%	-1.72%	-1.62%	7.47%	15.57%
-Vale Royal CCG	1.08%	-1.80%	-1.59%	6.80%	15.53%
-West Cheshire CCG	1.40%	-1.68%	-1.63%	7.74%	15.57%
Cheshire East (2 CCG areas)	2.03%	0.03%	-1.03%	8.09%	18.95%
-Eastern Cheshire CCG	2.32%	1.44%	-0.83%	8.15%	19.02%
-South Cheshire CCG	1.72%	-1.47%	-1.25%	8.01%	18.87%
Warrington	3.27%	0.03%	0.96%	8.84%	18.06%
Halton	1.17%	-3.99%	-2.17%	11.42%	19.21%
Knowsley	0.72%	0.29%	-2.44%	7.24%	18.01%
Liverpool	2.18%	3.03%	-0.14%	6.14%	14.05%
Sefton (2 CCG areas)	0.65%	-0.54%	-2.66%	5.67%	15.94%
-South Sefton CCG	0.36%	-0.50%	-2.71%	5.77%	15.44%
-Southport & Formby CCG	1.04%	-0.60%	-2.58%	5.55%	16.41%
St Helens	1.75%	-0.56%	-0.92%	6.12%	20.72%
Wirral	0.98%	-2.79%	-1.75%	6.83%	10.00%
Lancashire County Council (6 CCG areas)	1.22%	-2.23%	-1.23%	6.49%	12.95%
-West Lancashire CCG	0.75%	-2.34%	-1.28%	6.77%	13.06%
England	3.68%	0.61%	1.56%	8.40%	14.52%

Source: ONS population projections.

## Dementia Estimates

Estimates of the number of people aged 65 and over living with dementia were produced for the POPPI (Projecting Older People Population Information System). These estimates are based on the age profile of the population only and do not consider other risk factors. These estimates suggest that the number of people with dementia will increase by 10–20% in Cheshire, Merseyside and Lancashire. This will substantially increase the healthcare costs and in particular the social care costs in each area. There is evidence that investing in early diagnosis of dementia through memory clinic services should produce a cost saving in reducing the need for social care placements.<sup>1</sup>

**Table 2: Estimates of number of people aged 65+ living with dementia, year 2015 and 2020, by local authority area.**

Area	Estimated number of people aged 65+ with dementia 2015	Estimated number of people aged 65+ with dementia 2020	% increase 2015-2020	Estimated increase in healthcare costs per year by 2020	Estimated increase in social care costs per year by 2020
<b>Cheshire West &amp; Chester (2 CCG areas)</b>	4,712	5,476	16.2%	£4,682,000	£11,214,000
<b>Cheshire East (2 CCG areas)</b>	5,741	6,786	18.2%	£6,513,000	£15,601,000
<b>Warrington</b>	2,354	2,804	19.1%	£2,826,000	£6,770,000
<b>Halton</b>	1,343	1,554	15.7%	£1,287,000	£3,084,000
<b>Knowsley</b>	1,713	1,939	13.2%	£1,349,000	£3,231,000
<b>Liverpool</b>	4,715	5,193	10.1%	£2,776,000	£6,649,000
<b>Sefton (2 CCG areas)</b>	4,561	5,135	12.6%	£3,407,000	£8,162,000
<b>St Helens</b>	2,246	2,631	17.1%	£2,378,000	£5,696,000
<b>Wirral</b>	4,767	5,345	12.1%	£3,417,000	£8,185,000
<b>Lancashire County Council (6 CCG areas)</b>	16,054	18,405	14.6%	£14,212,000	£34,042,000
<b>England</b>	679,037	779,528	14.8%	£608,286,000	£1,457,057,000

Source: [POPPI](#) combined with costs from [Dementia UK](#).

<sup>1</sup> <http://www.londonhp.nhs.uk/wp-content/uploads/2011/03/06-Cost-of-dementia.pdf>

### 3. Diabetes

The most recent prevalence estimates for diabetes were published by Yorkshire and Humber Public Health Observatory (YHPHO) in 2012 (new estimates are imminent in 2016). These gave estimates of the total number of people with diabetes (including types 1 & 2, diagnosed and undiagnosed). These were available by CCG and local authority. There were also projections by local authority over the time period from 2010-2030, which accounted for different scenarios around obesity. Diagnosed diabetes prevalence is measured in the QOF (Quality and Outcomes Framework) which is a reward and incentive scheme for NHS GP Practices.

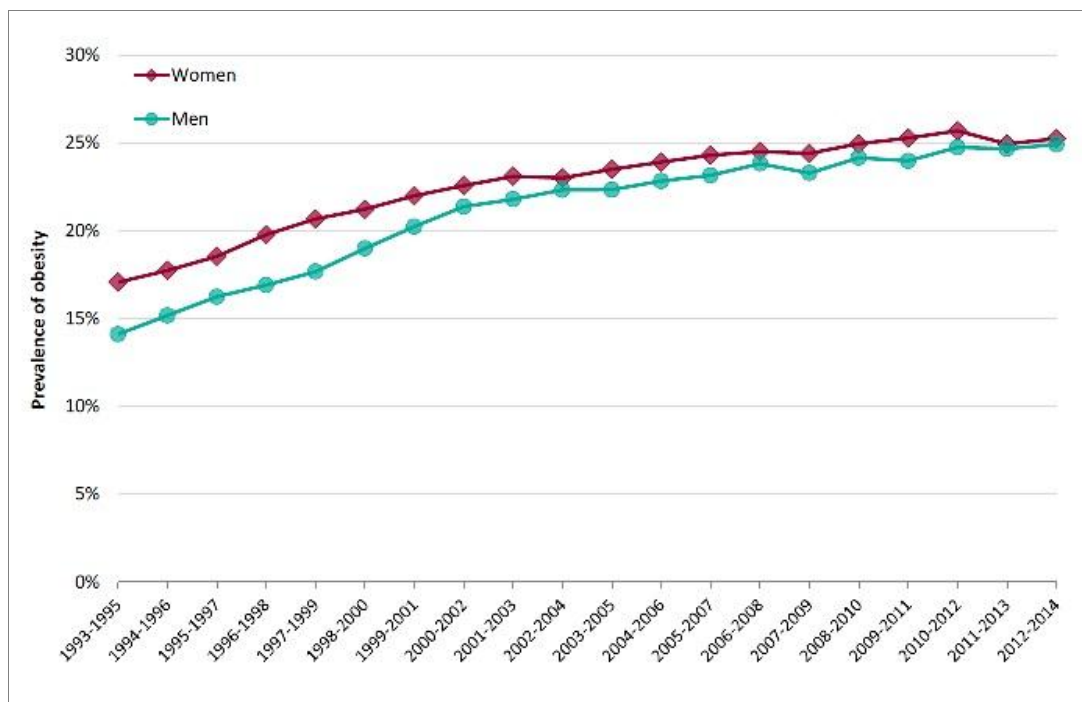
Around 89% of diabetes cases are type 2, and obesity is the main cause of these. The modelled scenarios from YHPHO looked at the difference in diabetes prevalence if obesity prevalence was maintained at 2010 levels, or obesity continued to increase. Data suggests that obesity prevalence has levelled out since 2010. Even though obesity prevalence may have levelled out, it would have to decrease substantially to prevent a scenario where diabetes prevalence will reach 8% and then 10% of the adult population. Although obesity has not increased significantly since 2010, the difference between the two modelled scenarios could instead represent something like the opportunity if obesity rates were to decrease rather than be stable. Preventing obesity requires a complex set of policy, community and individual level measures, but has the opportunity to save the health service and wider society a significant amount of money by preventing diseases like diabetes, cardiovascular disease and cancer. Devolution may mean that policy interventions to prevent obesity that previously were not practical at a local authority footprint, may now become more feasible on a larger footprint.

There is a considerable population in each area with early signs of impaired glucose regulation, with around 10-12% of the population at risk of developing diabetes (Table 3). There is good evidence from the USA for the diabetes prevention programme (DPP, known in England as 'Healthier You: the NHS Diabetes Prevention Programme') which is currently being planned to roll out across England, including Cheshire, Wirral, Sefton and St Helens.<sup>2</sup>

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<sup>2</sup> <https://www.england.nhs.uk/ourwork/qual-clin-lead/diabetes-prevention/>

Figure 1: Trend in obesity prevalence,1993-2014 in people aged 16 and over



Source: Health Survey for England

Table 3: Estimated number of people and prevalence of non-diabetic hyperglycaemia, 2015, for local authorities in Cheshire, Merseyside and Lancashire.

Area	Diabetes – non-diabetic hyperglycaemia	Diabetes - prevalence of non-diabetic hyperglycaemia
Cheshire West & Chester (2 CCG areas)	32,429	11.8%
Cheshire East (2 CCG areas)	37,001	11.9%
Warrington	18,240	10.8%
Halton	11,595	11.4%
Knowsley	12,702	10.8%
Liverpool	39,059	10.0%
Sefton (2 CCG areas)	28,086	12.4%
St Helens	17,015	11.7%
Wirral	30,197	11.5%
Lancashire (6 CCG areas)	113,023	11.7%
All Cheshire, Mersey, Lancs above	339,348	11.4%
England	5,047,891	11.4%

Source: PHE: <https://www.gov.uk/government/publications/nhs-diabetes-prevention-programme-non-diabetic-hyperglycaemia>

Note: Nondiabetic hyperglycaemia defined as an HBA1c value between 6.0% (42mmol/mol) and 6.4% (47mmol/mol), excluding individuals who had already been diagnosed with diabetes

## Costs of diabetes

The estimated cost per year of an individual having diabetes in 2010/11 was estimated at around £6,320, of which around £2,613 is direct health and social care costs.<sup>3</sup> The majority of diabetes costs are caused by complications, many of which can be prevented with good management such as having foot checks, eye checks and being tested for protein in the urine.

## Opportunity for cost savings from preventing obesity

Based on the [different obesity scenarios in the YHPHO model](#), there is a considerable opportunity to save money on diabetes from a reduction in obesity. For Cheshire, Merseyside and Lancashire, the difference between the two scenarios is £18.3million per year in direct costs, and a further £25.9million in indirect costs (costs not adjusted for inflation). So even when looking at diabetes alone, changing the prevalence of obesity has an opportunity to make a real difference.

**Table 4: Estimated diabetes prevalence by local authority, under base case scenario, 2015 and 2020.**

Area	2015		2020		Change in prevalence 2015-2020
	Number	Prevalence	Number	Prevalence	
Cheshire West & Chester (2 CCG areas)	19,965	7.4%	21,475	7.8%	6.6%
Cheshire East (2 CCG areas)	22,680	7.3%	24,858	7.8%	6.7%
Warrington	11,788	7.1%	12,971	7.6%	7.1%
Halton	7,288	7.6%	7,944	8.2%	7.4%
Knowsley	9,405	7.8%	10,054	8.3%	6.7%
Liverpool	26,553	7.2%	28,230	7.6%	5.9%
Sefton (2 CCG areas)	18,109	8.1%	19,135	8.7%	6.8%
St Helens	11,320	7.7%	12,098	8.2%	6.3%
Wirral	19,759	8.0%	20,866	8.5%	6.1%
Lancashire County Council (6 CCG areas)	77,808	8.0%	85,006	8.6%	7.4%
Total all areas	224,676	7.7%	242,636	8.2%	6.8%
<b>England</b>	<b>3,348,320</b>	<b>7.6%</b>	<b>3,745,210</b>	<b>8.2%</b>	<b>7.5%</b>

Source: [YHPHO diabetes prevalence model](#)

<sup>3</sup> Based on Hex & Bartlett, 2012. Total UK cost of diabetes £23.7bn of which £9.8bn direct; <https://jdrf.org.uk/wp-content/uploads/2015/10/Hex-and-Bartlett.pdf> and Diabetes UK (2014) states 3.75 million people in UK have diabetes. <https://www.diabetes.org.uk/Documents/Diabetes%20UK%20Cost%20of%20Diabetes%20Report.pdf>

**Table 5: Costs associated with different diabetes scenarios for the year 2020, based on high obesity scenario and stable obesity scenario, for local authorities in Cheshire, Merseyside and Lancashire (Data only available at local authority, not CCG level)**

Local Authority Area	High obesity scenario		Stable obesity scenario		Difference in direct diabetes costs per annum due to changes in obesity	Difference in total diabetes costs per annum due to changes in obesity
	Number of adults with diabetes	Prevalence of diabetes	Number of adults with diabetes	Prevalence of diabetes		
Cheshire West & Chester (2 CCG areas)	21,475	7.8%	20,857	7.6%	£1,616,000	£3,909,000
Cheshire East (2 CCG areas)	24,858	7.8%	24,142	7.6%	£1,870,000	£4,522,000
Warrington	12,971	7.6%	12,598	7.4%	£974,000	£2,356,000
Halton	7,944	8.2%	7,715	8.0%	£599,000	£1,448,000
Knowsley	10,054	8.3%	9,762	8.1%	£763,000	£1,846,000
Liverpool	28,230	7.6%	27,415	7.4%	£2,128,000	£5,147,000
Sefton (2 CCG areas)	19,135	8.7%	18,579	8.4%	£1,452,000	£3,512,000
St Helens	12,098	8.2%	11,749	8.0%	£911,000	£2,204,000
Wirral	20,866	8.5%	20,260	8.2%	£1,584,000	£3,832,000
Lancashire (6 CCG areas)	85,006	8.6%	82,557	8.3%	£6,397,000	£15,473,000
Total for all areas	242,636	8.2%	235,634	8.0%	£18,295,000	£44,249,000
England	3,745,210	8.2%	3,637,081	7.9%	£282,541,000	£683,376,000

Source: YPHO diabetes prevalence model



## 4. Hypertension

The most recent prevalence estimates for hypertension were produced in 2011. Combining these estimates with the most recent QOF prevalence data for hypertension suggests that around 54% of individuals with hypertension have been diagnosed as such. The cost of treating hypertension is estimated at around £199 per person per year. A report by PHE, 'Tackling High Blood Pressure: From evidence into action'<sup>4</sup> reported the results of economic modelling which suggested that increasing hypertension diagnosis by 15% would produce health and social care cost savings of around £120m and result in around 7000 QALYs gained over ten years. Valuing these QALYs at £20,000 per QALY would produce a total social value of £260million or £26million per annum for England. If we pro rata these results to CCG areas in proportion with their undiagnosed hypertension population, we see potential health and social care cost savings of £1.384million and QALY gains worth £1.187million. PHE are producing some more tools around the financial burden of undiagnosed hypertension.

**Table 6: Potential economic value of increased hypertension diagnosis rates.**

Area	Hypertension - diagnosed from QOF	Hypertension - estimated undiagnosed	Hypertension - value of extra 15% diagnosis per annum
Cheshire West & Chester (2 CCG areas)	52,829	38,570	£225,184
-Vale Royal CCG	16,082	9,283	£62,493
-West Cheshire CCG	36,747	29,287	£162,691
Cheshire East (2 CCG areas)	58,488	39,984	£242,610
-Eastern Cheshire CCG	30,581	24,172	£134,897
-South Cheshire CCG	27,907	15,812	£107,712
Warrington	29,092	21,408	£124,419
Halton	19,403	12,738	£79,187
Knowsley	23,557	17,454	£101,041
Liverpool	68,214	52,641	£297,755
Sefton (2 CCG areas)	44,591	32,996	£191,154
-South Sefton CCG	24,237	17,440	£102,681
-Southport & Formby CCG	20,354	15,556	£88,473
St Helens	32,683	18,465	£126,015
Wirral	50,733	39,519	£222,358
Lancashire (8 CCG areas inc. Blackburn and Blackpool)	223,779	166,763	£962,195
-West Lancashire CCG	17,535	11,666	£71,944
All Cheshire, Mersey, Lancs	603,369	440,538	£2,571,917
<b>England</b>	<b>7,833,779</b>	<b>5,774,045</b>	<b>£26,000,000</b>
<b>Data source</b>	2014/15 QOF Data	PHE (2011 estimates minus 2014/15 prevalence)	Based on costs in 'Tackling High Blood Pressure: From evidence into action'

<sup>4</sup> PHE (2014) Tackling High Blood Pressure: from evidence into action  
[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/404881/Tackling\\_high\\_blood\\_pressure\\_-\\_FINAL.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/404881/Tackling_high_blood_pressure_-_FINAL.pdf)

## Cost effective interventions around hypertension

The modelling behind 'Tackling High Blood Pressure: From evidence into action' found that the most cost effective interventions were around reducing dietary salt intake. It may be that policy interventions around salt can be considered as part of public health work around devolution. Providing healthy lifestyle advice and providing testing in pharmacies were also cost effective when considered over a long time horizon. Testing in community venues, and commissioning education and awareness programmes were less likely to be cost effective based on this modelling. For already diagnosed populations, drug adherence interventions were also cost effective, as well as dietary salt reduction and healthy lifestyle advice (see Appendix 3 for detailed cost effectiveness tables). NICE Guidance CG127 found that using Ambulatory Blood Pressure Monitoring (ABPM) was likely to be cost effective in reducing false positives and false negatives in diagnosing high blood pressure (for example in individuals who get 'white coat syndrome' where the stress of a visit to the doctor makes their blood pressure increase temporarily). In Canada there has been a step change in diagnosis and management of blood pressure, and some areas of England such as Tower Hamlets have quickly improved their diagnosis and management rates.<sup>5</sup> A series of CVD prevention opportunity tools produced by PHE in 2016 give the potential financial opportunity from reducing unwanted variation in the proportion of people diagnosed with hypertension whose blood pressure is controlled to 150/90 mmHg or less. Table 7 shows the potential economic benefits if all GPs in each CCG performed as well as the 75<sup>th</sup> percentile in terms of blood pressure control in people diagnosed with hypertension.

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<sup>5</sup> <https://www.gov.uk/guidance/high-blood-pressure-plan-and-deliver-effective-services-and-treatment>

Table 7. Potential economic value of events prevented over five years if all GP practices performed as well as the 75th best percentile for managing blood pressure in people with hypertension.

Area	Events prevented over five years				One year cost savings	
	Stroke: 1 in 67	Heart attack: 1 in 100	Heart failure: 1 in 48	Deaths: 1 in 125	One year savings (NHS)	One year savings (social care)
<b>Cheshire West &amp; Chester (2 CCG areas)</b>	31	20	43	16	£573,195	£122,853
Vale Royal CCG	9	6	13	5	£168,813	£35,667
West Cheshire CCG	22	14	30	11	£404,383	£87,186
<b>Cheshire East (2 CCG areas)</b>	23	14	32	12	£418,085	£91,149
Eastern Cheshire CCG	13	8	18	7	£236,948	£51,519
South Cheshire CCG	10	6	14	5	£181,137	£39,630
<b>Warrington</b>	13	8	18	7	£236,926	£51,519
<b>Halton</b>	13	9	19	7	£247,057	£51,519
<b>Knowsley</b>	9	6	13	5	£168,813	£35,667
<b>Liverpool</b>	38	25	53	20	£707,251	£150,594
<b>Sefton (2 CCG areas)</b>	19	12	26	10	£348,571	£75,297
South Sefton CCG	8	5	11	4	£146,380	£31,704
Southport & Formby CCG	11	7	15	6	£202,191	£43,593
<b>St Helens</b>	17	11	24	9	£315,192	£67,371
<b>Wirral</b>	20	13	28	10	£371,004	£79,260
<b>West Lancashire CCG</b>	11	7	15	5	£202,191	£43,593

Source: PHE CVD Prevention Opportunities Tool <http://www.yhpho.org.uk/nop/>

## 5. Making Every Contact Count Training

Making every contact count (MECC) is based on the principles of behaviour change and empowering professionals to have short purposeful conversations with people about their health. It has the potential to be very cost effective, although the effects may be difficult to measure without implementing a large and potentially onerous programme of data collection. Public-facing staff in LAs and the NHS may meet around 30 people a day so even having just one additional health chat per week could produce real benefits. There are also potential benefits from staff changing their own behaviour, or that of their family or friends, towards a healthier lifestyle. One area found that 78% of staff who had MECC training changed their own lifestyle.

MECC was initially proposed to unleash the potential of the wider NHS workforce to promote healthier lifestyle choices and to signpost to relevant services, and was identified as a priority for the NHS in 2014/15 after being recommended by the NHS Future Forum in 2012.<sup>6</sup> Public Health England and HEE are currently looking at having a coordinated national approach to MECC and accredited training. PHE have commissioned some Value for Money work around MECC which may also help to make the case.

<sup>6</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/216423/dh\\_132114.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216423/dh_132114.pdf)

MECC came about as a new way of describing behaviour change training, using approaches developed by Yorkshire & Humber NHS, who developed '*Making Every Contact Count (MECC) Prevention and Lifestyle Behaviour Change: a competence framework (P&BHCF)*'.<sup>7</sup> This Framework is based on NICE behaviour change guidance (2007) and defines behaviour change in 4 levels:

**Level 1: Brief advice and signposting**

**Level 2: Behaviour change intervention e.g. brief intervention or motivational interviewing.**

**Level 3: Behaviour change intervention programme e.g. weight management programmes.**

**Level 4: Expert or specialist interventions that are condition specific or require additional specialist training.**

There is a 'Making Every Contact Count' Website<sup>8</sup> which has a range of training resources, impact mapping, competency frameworks, and case studies. There is a self-assessment tool<sup>9</sup> for professionals.

### **Cost effectiveness scenario**

We assumed that for each area, 50 staff per 100,000 population are trained at a cost £500 per person, and each person has on average 25 brief conversations around alcohol, smoking and weight, or around the importance of medicines adherence, in a year. In addition a small number of people would be referred to onward services. Under these assumptions then a MECC programme could be very cost effective. Before any cost savings are taken into account, the cost per QALY gained over one year would be £579 which would be considered to be very cost effective. If QALYs were valued at £20,000, this would be a benefit to cost ratio of around £35 gained for each £1 spent. Once cost savings from improved outcomes are taken into account, the programme may be cost saving. There has been an evolving literature around social isolation and wellbeing over the last ten years, and it may be that the MECC approach should be used to refer people on to wellbeing services. Appendix 3 looks at some examples of the cost effectiveness of wellbeing interventions.

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<sup>7</sup> <http://www.makeeverycontactcount.co.uk/docs/Prevention%20and%20Lifestyle%20Behaviour%20Change%20A%20Competence%20Framework.pdf>

<sup>8</sup> <http://www.makeeverycontactcount.co.uk/index.html>

<sup>9</sup> <http://www.makeeverycontactcount.co.uk/Training%20and%20Resources/SelfAssessTool.html>

**Table 8: Potential QALYs gained from brief interventions and onwards referrals, based on 1000 MECC conversations resulting in a behaviour change attempt**

Outcome category	Description	Average QALYs gained per person	N people given interventions	Total QALYs gained	Source of Average QALY estimate
Alcohol	Alcohol brief intervention	0.225	250	56.3	From D Mortimer, L Segal (2005) Economic evaluation of interventions for problem drinking and alcohol dependence: cost per QALY estimates. Alcohol and Alcoholism 40 (6), 549-555
Alcohol	Alcohol referral	0.0203	10	0.2	Assumes 5% attribution of 0.406 QALYs, from D Mortimer, L Segal (2005) Economic evaluation of interventions for problem drinking and alcohol dependence: cost per QALY estimates. Alcohol and Alcoholism 40 (6), 549-555
Smoking	Smoking brief intervention	0.1166	250	29.2	From NICE (2008) Brief interventions and referral for smoking cessation: economic modelling report <a href="http://www.nice.org.uk/nicemedia/live/11375/41134/41134.pdf">http://www.nice.org.uk/nicemedia/live/11375/41134/41134.pdf</a>
Smoking	Smoking referral	0.03152	50	1.6	Based on lifetime QALYs from quitter 1.97 * 8% quit rate * 20% attribution. QALYs from p.85 NICE (2008) Economic analysis of smoking cessation interventions for the general population <a href="http://www.nice.org.uk/media/CD1/8C/EconomicAnalysisInterventionsImproveUseSmokingCessationGeneralPopulation.pdf">http://www.nice.org.uk/media/CD1/8C/EconomicAnalysisInterventionsImproveUseSmokingCessationGeneralPopulation.pdf</a>
Weight	Weight/exercise/healthy eating brief intervention	0.132	250	33.0	Based on incremental QALY for counselling from primary care staff from NICE (2006). Costing Template for Public Health Intervention Number 2. Four commonly used methods to increase physical activity. London: NICE [Online] Available from: <a href="http://guidance.nice.org.uk/PH2/CostingTemplate/xls/English">http://guidance.nice.org.uk/PH2/CostingTemplate/xls/English</a> [Accessed 9th August 2010].
Weight	Weight/exercise/healthy eating referral	0.04492	40	1.8	Assumes 20% attribution of 0.224 QALYs, From behavioural treatment p. 734 NICE (2006) Obesity full guidance economic modelling <a href="http://www.nice.org.uk/nicemedia/live/11000/38300/38300.pdf">http://www.nice.org.uk/nicemedia/live/11000/38300/38300.pdf</a> <a href="http://www.nice.org.uk/nicemedia/live/11000/38300/38300.pdf">http://www.nice.org.uk/nicemedia/live/11000/38300/38300.pdf</a>
Adherence	Medicines adherence	0.1084	150	16.3	Assumes 20% change in adherence, based on oral diabetes medication, from Cobden DS, Niessen LW, Rutten FF, Redekop WK (2010) Modeling the economic impact of medication adherence in type 2 diabetes: a theoretical approach. Patient Preference Adherence. 2010 Sep 7;4:283-90.
Total			1000	138.2	

Table 9: Potential Costs and QALYs gained from MECC training by area.

Area	Total population	N staff trained on MECC (50 staff per 100k pop.)	Cost of training (£500 per person)	MECC conversations (25 per person per year)	Assume 1/4 of conversations lead to behaviour change attempt	Potential QALYs gained
<b>Cheshire West &amp; Chester (2 CCG areas)</b>	333,846	167	£83,462	4,173	1,043	145
Vale Royal CCG	102,444	51	£25,611	1,281	320	44
West Cheshire CCG	231,401	116	£57,850	2,893	723	100
<b>Cheshire East (2 CCG areas)</b>	376,809	188	£94,202	4,710	1,178	163
Eastern Cheshire CCG	198,069	99	£49,517	2,476	619	86
South Cheshire CCG	178,740	89	£44,685	2,234	559	77
Warrington	209,118	105	£52,280	2,614	653	91
Halton	126,822	63	£31,706	1,585	396	55
Knowsley	146,546	73	£36,637	1,832	458	64
Liverpool	478,793	239	£119,698	5,985	1,496	208
<b>Sefton (2 CCG areas)</b>	273,579	137	£68,395	3,420	855	119
South Sefton CCG	158,614	79	£39,654	1,983	496	69
Southport & Formby CCG	114,965	57	£28,741	1,437	359	50
St Helens	178,226	89	£44,557	2,228	557	77
Wirral	321,504	161	£80,376	4,019	1,005	139
<b>Lancashire County Council (6 CCG areas)</b>	1,104,532	552	£276,133	13,807	3,452	479
West Lancashire CCG	112,409	56	£28,102	1,405	351	49
<b>England</b>	55,218,701	27609	£13,804,675	690,234	172,558	23,931

## 6. Appendix 1. Case Studies of Public Health Cost Effectiveness

There has not been a huge number of cost effectiveness studies carried out of public health interventions. A rapid review of public health evaluations found that only 27% provided cost-effectiveness evidence.<sup>10</sup> Several modelling studies have been commissioned by NICE to estimate the cost effectiveness of public health programmes and have combined outcomes and costs from different studies.<sup>11</sup> 21 out of 26 NICE public health publications between 2006 and 2010 used cost-utility analysis (cost per QALY). These included interventions for smoking cessation, promoting physical activity, preventing STIs and unwanted conceptions in young people, reducing substance misuse in young people, promoting healthy eating, supporting people at risk of dying prematurely, promoting social and emotional wellbeing in primary and secondary schools, promoting mental wellbeing in older people, management of long term sickness and incapacity, wellbeing at work, alcohol use disorders, and CVD prevention. In a review of NICE Public Health Guidance, 200 cost-effectiveness estimates were analysed. Of these, 15% were cost saving (i.e. the intervention was more effective and cheaper than comparator), 85% were cost-effective at a threshold of £20,000 per QALY and 89% at the higher threshold of £30,000. 5.5% were above £30,000 and 5.5% of the interventions were dominated (i.e. the intervention was more costly and less effective than comparator). Most interventions had a very low cost per QALY, indicating they are highly cost-effective. Many interventions (particularly around smoking cessation) produced a net cost saving for the NHS. This study also acknowledges limitations in economic modelling of public health interventions such as lack of comparator, not considering synergy between interventions offered together, and not considering diminishing returns.

## 7. Appendix 2. Hypertension Cost Effectiveness Estimates

These tables of cost effectiveness of hypertension interventions, are from Optimity Matrix (2014). Cost-effectiveness review of blood pressure interventions: A Report to the Blood Pressure System Leadership Board. November 2014.

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<sup>10</sup> Matrix Evidence and Bazian (2008) Prioritising investments in public health. Available from <http://www.matrixknowledge.com/resources/prioritising-investment-in-public-health>

<sup>11</sup> Owen, L., Morgan, A., Fischer, A., Ellis, S., Hoy, A., & Kelly, M. P. (2012). The cost-effectiveness of public health interventions. *Journal of Public Health*, 34(1), 37-45.

Table 10: Incremental Cost Effectiveness Ratio (ICER) Results for General Adult Population.

General adult population					
Category	Description	ICER (including healthcare and social care costs) (1 year)	ICER (including healthcare and social care costs) (5 year)	ICER (including healthcare and social care costs) (10 year)	ICER (including healthcare and social care costs) (lifetime)
1	National dietary salt reduction	<b>£-1,900</b> (£-2,000 – £-1,800)	<b>£-9,900</b> (£-9,900 – £-9,800)	<b>£-17,300</b> (£17,300 – £-17,300)	<b>£-34,262</b> (£-34,262 – £-34,262)
	Healthy lifestyle advice and change: improved lifestyle – diet, alcohol, exercise, obesity (health educator delivered)	<b>£170,100</b> (£170,100 – £170,100)	<b>£85,300</b> (£85,300 – £85,300)	<b>£25,700</b> (£25,700 – £25,700)	<b>£-18,700</b> (£-18,700 – £-18,700)
2	(clinician delivered)	<b>£60,700</b> (£11,400 – £109,900)	<b>£24,700</b> (£-2,500 – £52,000)	<b>£-2,500</b> (£-15,200 – £10,200)	<b>£-28,600</b> (£-33,000 – £-24,100)
	Testing - General practice (n.b. one included study is based on testing by dentists)	<b>£682,700</b> (£319,300 – £1,046,200)	<b>£368,800</b> (£167,800 – £569,700)	<b>£157,800</b> (£64,100 – £251,400)	<b>£27,700</b> (£-5,200 – £60,600)
3.a. ii	Testing – Pharmacy	<b>£191,700</b> (£191,700 – £191,700)	<b>£97,200</b> (£97,200 – £97,200)	<b>£31,300</b> (£31,300 – £31,300)	<b>£-16,700</b> (£-16,700 – £-16,700)
3.b	Testing – Secondary care	<b>As 3.a. i</b>			
3.c	Testing – Community venues	<b>£814,800</b> (£814,800 – £814,800)	<b>£446,200</b> (£446,200 – £446,200)	<b>£191,800</b> (£191,800 – £191,800)	<b>£39,700</b> (£39,700 – £39,700)
3.d	Testing – Home/commercial setting	<b>As 3.c</b>			
7	Education & awareness raising initiatives	<b>£493,200</b> (£493,200 – £493,200)	<b>£347,900</b> (£347,900 – £347,900)	<b>£149,100</b> (£149,100 – £149,100)	<b>£27,000</b> (£27,000 – £27,000)



Table 11: Incremental Cost Effectiveness Ratio (ICER) Results for Adult Population diagnosed with Hypertension.

Adults with diagnosed hypertension					
Category	Description	ICER (1 year)	ICER (5 year)	ICER (10 year)	ICER (lifetime)
1	National dietary salt reduction	<b>£-9,700</b> (£-9,800 – £-9,600)	<b>£-9,900</b> (£-10,000 – £-9,900)	<b>£-16,100</b> (£-16,800 – £-15,300)	<b>£-32,400</b> (£-32,400 – £-32,400)
2	Healthy lifestyle advice and change: improved lifestyle – diet, alcohol, exercise, obesity	<b>£71,000</b> (£7,700 - £357,200)	<b>£7,300</b> (£-6,200 - £68,600)	<b>£-9,000</b> (£-15,100 - £18,900)	<b>£-30,000</b> (£-21,000 – £-32,000)
4	Effective primary care management of hypertension	<b>£2,083,600</b> (£578,900 - £5,388,200)	<b>£438,000</b> (£116,000 - £1,145,200)	<b>£187,000</b> (£40,500 - £508,800)	<b>£33,000</b> (£-14,000 - £136,200)
5	Drug therapy adherence interventions	<b>£693,600</b> (£255,400 - £1,582,500)	<b>£140,600</b> (£46,800 - £330,800)	<b>£51,700</b> (£9,000 - £138,200)	<b>£-10,500</b> (£-24,100 - £17,300)
6	Support for self-management	<b>£1,297,100</b> (£294,300 - £9,855,800)	<b>£269,700</b> (£55,100 - £2,101,200)	<b>£110,400</b> (£12,800 - £943,800)	<b>£8,400</b> (£-22,900 – £-275,600)

## 8. Appendix 3. Economic evidence for services to improve wellbeing

There have been some examples of wellbeing services that have produced economic evidence of their value,

### Rotherham social prescribing pilot

An evaluation of the Rotherham social prescribing service<sup>12</sup> showed a return on investment of between £1.41 and £3.38 per every £1 spent, based on an observed reduction in hospital activity in individuals who used the programme. These are real, cashable savings to the NHS. The cost savings were greatest in patients who were referred to a voluntary and community sector provider programme.

<sup>12</sup> <http://www.shu.ac.uk/research/cresr/sites/shu.ac.uk/files/social-economic-impact-rotherham.pdf>

Table 12: NHS Cost savings per patient per year from Rotherham social prescribing pilot

Description	All patients	Patients referred to a grant funded VCS* provider
Inpatient admissions	£198	£281
A&E attendances	£27	£38
Outpatient appointments	£39	£59
<b>Total cost savings</b>	<b>£264</b>	<b>£378</b>

\*voluntary care sector

### NICE befriending service model

An economic analysis of a befriending service for older people carried out for NICE<sup>13</sup> in 2015 found that the service would create cost savings by reducing loneliness, making individuals more physically active and reducing the risk of depression, dementia, diabetes, stroke and coronary heart disease. The cost of the intervention per person was £77, but the cost savings from the reduction in disease prevalence was estimated at £391 giving a benefit to cost ratio of around £5 for every £1 spent. The impact of the intervention on health outcomes gave a net present value of £310 for the intervention, as well as 0.035 QALYs gained, which would be valued at an additional £690 (a QALY is a summary measure of life expectancy and quality of life).

Table 13: Results of NICE economic analysis of befriending programme

Health Outcome	% prevalence risk reduction	Cost saving per person	QALY gain per person
Depression	1.04%	£74	0.021
Dementia	0.21%	£68	0.001
Physical activity	1.93% increase		<i>Only impact on subsequent diseases measured</i>
Diabetes	0.13%	£24	0.004
Stroke	0.15%	£129	0.001
CHD	0.27%	£96	0.008

#### Summary

cost of programme	£77
cost savings	£391
net present value	£314
benefit: cost ratio	£5.08
total QALY gains (multiplicative)	0.03465
value of QALY gains (valued at £20,000 per QALY)	£693
total net present value including value of QALYs	£1,007
benefit: cost ratio including value of QALYs	£14.08

<sup>13</sup> Independence and mental wellbeing (including social and emotional wellbeing) for older people; Economic analysis. <https://www.nice.org.uk/guidance/GID-PHG65/documents/older-people-independence-and-mental-wellbeing-health-economic-analysis2>