

**UNIVERSITY OF BIRMINGHAM AND UNIVERSITY OF YORK
HEALTH ECONOMICS CONSORTIUM
(NICE EXTERNAL CONTRACTOR)**

Health economic report on piloted indicator

QOF indicator area: Hypertension Over 80

Potential output: Recommendations for NICE Menu

Contents

Introduction	2
Piloted indicator(s).....	2
Economic rationale for the indicator	2
Objective	2
Type of health economic analysis	2
Delivery cost of indicator.....	2
Effectiveness of indicator.....	3
Incremental cost-effectiveness ratio	3
Eligible population.....	4
Baseline level of achievement	5
Population.....	5
QOF Payments.....	5
Societal value of a QALY	5
QOF Points	5
Thresholds	6
Results	6
Discussion.....	7
References.....	7
Appendix A: Net Benefit Analysis	9

Introduction

This briefing paper provides a summary of the economic evidence generated on the proposed pilot five hypertension indicator for people patients over 80. The format of this paper is intended to provide the QOF Advisory Committee with sufficient information upon which to make a recommendation on whether the indicator is economically justifiable.

Piloted indicator

The percentage of patients over 80 years old with hypertension in whom the last recorded blood pressure (measured in the preceding 9 months) is 150/90 or less.

Economic rationale for the indicator

Patients with blood pressure persistently over 140/90 are defined as being hypertensive. Blood pressure (BP) greater than 115/70 is associated with increased risk of cardiovascular events as well as other poor health outcomes such as kidney disease and cognitive decline [1]. Risk of CVD also increases with age and current NICE Guidelines are that people over 80 with hypertension and BP of 150/90 or greater should be offered treatment to lower their BP.

NICE guidelines are explicit that there is no robust evidence that monitoring blood pressure to reduce it to a target – such as 150/90 - in hypertensive patients is cost effective [2]. However, the same guidance reported limited published evidence that treatment for hypertension in people over 80 was cost effective and this was supported by modelling work undertaken by NICE, which underpins the guidance.

Objective

To evaluate whether the proposed indicator represents a cost effective use of NHS resources.

Type of health economic analysis

An indicative net benefit approach is applied with a lifetime horizon at baseline.

Delivery cost of indicator

The NICE guidelines recommend both lifestyle modification and pharmaceutical interventions to lower blood pressure in hypertensive patients [2]. While the guidelines point out evidence for effectiveness of lifestyle modification, such as increasing exercise, the costs of such advice and support are minimal, although help to stop smoking could involve smoking cessation aides that could have a cost. At the base case we have assumed that advice can be given as part of a GP consultation that lasts 17.2 minutes at a cost of £53 extracted from the Unit Costs of Health and Social Care 2010 [3]. The total costs are increased by £500 per patient to reflect the costs of other interventions such as smoking cessation drug therapy, which has been costed at £1,000 per successful quitter [3]. The £500 cost in our model uses the assumption that 50% of people with hypertension smoke and all of

these will use pharmaceutical support to quit. This is likely to be a significant overestimate of the actual costs of delivering lifestyle interventions but will generate cautious estimates from the model.

Modelling underpinning the NICE guidance reported that for men aged 65 with a greater than 20% chance of CVD over 10 years, all pharmaceutical treatments saved healthcare resources and increased the number of QALYs. This finding was found to be reasonably robust as the risk of CVD and age changed, for both men and women. Importantly the findings still seemed to hold if the age increased to 85+ and if anything treatment is more cost effective as people get older. A Swiss study, identified by NICE, found that, over two years, pharmaceutical treatment for hypertensive patients over 80 was cost saving [5]. To produce a cautious estimate we have assumed that treatment with hypertensive medications is cost neutral for the over 80s. The treatment can be justified even if no savings had been identified by NICE given the low cost of all classes of hypertensive medications (a maximum of £25 per year per patient for generic drugs) [2].

The incremental cost of providing lifestyle modification advice and support and pharmaceutical treatment at baseline is £553 per patient.

Effectiveness of indicator

There is evidence that lifestyle modification including reduction in alcohol consumption, salt intake and smoking and increases in exercise all reduce blood pressure in patients with hypertension [2]. This reduction in blood pressure would reduce the risk of CVD events and so would also increase QALYs. However, no evidence was found by NICE linking lifestyle modification to QALY gains, as part of their evidence gathering for the hypertension guidelines. For the purposes of our modelling we have assumed that no QALY gains are generated from lifestyle modification. This is a cautious assumption especially as we have assumed costs to provide advice and support for lifestyle modification.

For pharmaceutical treatment, in our assessment of the indicator for the under 80s we used the data from the NICE model on anti-hypertensive medications where the average age was 65. We used a cautious estimate of 0.32 QALYs gained over a lifetime, weighted by a compliance rate of 20%. This gives a QALY gain for people with hypertension taking medication for the condition of 0.064. There is no information on the QALY gains for the over 80s in the NICE model so we have assumed at baseline that the QALY gain is 50% of that of a 65 year old for a person over the age of 80. Sensitivity analysis was used to explore how the analysis is affected if gains of between 25%-75% of a 65 year old are used.

This is a particularly cautious assumption as the indicator itself is designed to ensure that patients blood pressure is lowered which would encourage GPs to ensure compliance and the assumed QALY gain is based on any reduction in blood pressure from treatment and not a specific reduction below a level of 150/90.

The incremental lifetime baseline QALY gain of treatment of hypertensive patients over to a BP of 150/90 with drug therapy is 0.032.

Incremental cost-effectiveness ratio

The NICE model of pharmaceutical intervention found that treatment dominated (ie, it was cheaper and had better health outcomes) no intervention at baseline for men

and women over 65 with annual risk of CVD of 2%. This finding held for patients aged 85 and older. The Swiss study mentioned by NICE reported that pharmaceutical hypertension treatment in the over 80s dominated no treatment, over two years.

Figure 1: Incremental cost-effectiveness ratio

$$ICER = \frac{Cost_{Treatment} - Cost_{Alternative}}{Effect_{Treatment} - Effect_{Alternative}}$$

Eligible population

The eligible population is all patients aged over 80 with diagnosed hypertension as defined as BP>140/90. Data from the Health Survey for England¹ provides information on the prevalence by age (16+) of hypertension that is successfully treated, untreated and uncontrolled despite treatment. For people aged 75 and over the survey suggests that 79.4% have been diagnosed with hypertension. These rates were applied to population statistics from the ONS² that estimate 4.8% of the UK population is 80 or over. Combining these two statistics suggests that 3.8% of an average practice population will be 80 or over and have hypertension. As the rate of hypertension from the Health Survey for England is for those over 75 and prevalence of hypertension increases with age this is likely to be an underestimate.

The NICE guidance on hypertension is explicit that only people with higher degrees of cardiovascular risk (>20% 10 year risk) should be offered pharmaceutical treatment. For patients aged 80 and over the risk score due to their age and hypertension means that they will all meet this risk criteria. However, NICE guidelines are explicit that people over 80 should not be offered pharmaceutical treatment if there are comorbidities contraindicating drug therapy. We have assumed at baseline that all people over 80 will be suitable for pharmaceutical treatment. Due to the very low cost of generics meaning this has little impact on the average cost. In any case sensitivity analysis is used to explore the impact of higher or lower costs and effectiveness and in part this reflects the potential that a proportion of patients may neither incur the costs nor benefits of pharmaceutical therapy to lower blood pressure.

¹ See <http://www.ic.nhs.uk/statistics-and-data-collections/health-and-lifestyles-related-surveys/health-survey-for-england/health-survey-for-england--2010-trend-tables>

² See <http://www.neighbourhood.statistics.gov.uk/HTMLDocs/dvc1/UKPyramid.html>

Baseline level of achievement

The indicator was achieved for 73.4% of eligible patients at the beginning of the pilot, rising to 80.9% at its conclusion. The distribution of practice achievement at the final data upload was 70 – 95%.

Population

In the base case, the threshold analysis of the proposed indicator was conducted based on the total practice population registered with practices in England, that is, 8,228 practices with a mean practice size of 6,297.

Table 1: Practice information for all UK members

Country	Number of practices	Number of patients
England	8,228	6,297
Scotland	1,014	5,122
Wales	488	6,146
Northern Ireland	357	5,011

QOF Payments

Each QOF point is assumed to result in a payment of £133.76. This is the value per point in England during 2012/13 (source; Information Centre).

Table 2: Value per point for all UK members (most recently available)

Country	Value per point
England	£133.76
Scotland	£130.46
Wales	£133.72
Northern Ireland	£125.04

Societal value of a QALY

The expected increase in quality adjusted life year (QALY) will be costed at both £20,000 and £25,000 per QALY. This is based on the bottom and the middle of the range £20,000 - £30,000, below which NICE generally considers something to be cost effective.

QOF Points

The economic analysis considers the cost-effectiveness of incentivising the proposed activity over a range of QOF points. The range of QOF points evaluated was agreed by NICE, YHEC and the economic sub-group to justify the practice successfully completing the activity.

In the base case analysis, 10 points were allocated to the proposed indicator. This reflects the 55 points allocated to the previous similar hypertension indicator less the fact that those under 80 have now got a separate indicator. Sensitivity analysis will be followed out between the agreed lower and upper bounds of 5 and 15 points (i.e. the range evaluated).

Thresholds

Based upon work with pilot GP practices around baseline levels of achievement payment thresholds of 60-90% were suggested by the pilot team.

Results (assuming a value per QALY of £25,000)

The indicative net benefit analysis suggests that the indicator is highly cost effective, with QOF payments up to the upper bound of 15 points warranted on economic grounds (Appendix A). Under our conservative assumptions, the increase in quality of life offered by advice and treatment outweighs the additional healthcare costs in a net benefit analysis if the value per QALY is assumed to be £25,000 and achievement is at least 74%.

Sensitivity analysis shows the findings are sensitive to a 50% increase in costs (Appendix B) and a 50% reduction in the QALY gain per patient (Appendix C). The latter of these is equivalent to the population eligible for hypertensive medication falling to 50% of those over 80 with hypertension. The indicator fails to be cost effective at 10 points and 90% achievement when the cost of intervention rises 39% to £766 or the QALY gain per patient falls 28% to 0.023.

If the assumptions underpinning this analysis hold, then due to the potential size of the eligible population and the relatively low cost of the intervention compared to potential quality of life gains, there is a strong economic case for the indicator at a baseline of 10 points. There are also economic grounds at baseline to award up to the maximum QOF points appropriate for this indicator, i.e. 15 points.

Results (assuming a value per QALY of £20,000)

The indicative net benefit analysis suggests that the indicator is highly cost effective, with QOF payments up to the upper bound of 10 points warranted on economic grounds (Appendix D). Under our conservative assumptions, the increase in quality of life offered by advice and treatment outweighs the additional healthcare costs in a net benefit analysis if the value per QALY is assumed to be £20,000 and achievement is at least 77%. The indicator ceases to be cost effective at a QALY value of £18,334 with 90% achievement.

Sensitivity analysis shows the findings are sensitive to a 50% increase in costs (Appendix E) and a 50% reduction in the QALY gain per patient (Appendix F). The latter of these is equivalent to the population eligible for hypertensive medication falling to 50% of those over 80 with hypertension. The indicator fails to be cost effective at 10 points and 90% achievement, when the costs of the intervention rise 10% to £606 or the QALY gain per patient falls 9% to 0.029.

If the assumptions underpinning this analysis hold, then due to the potential size of the eligible population and the relatively low cost of the intervention compared to

potential quality of life gains there is a strong economic case for the indicator at a baseline of 10 points. There are also economic grounds at baseline to award up to the maximum QOF points appropriate for this indicator, i.e. 15 points.

Discussion

Our baseline analysis was underpinned by several conservative assumptions. We have taken a very pessimistic assumption that the costs of lifestyle modification are included but no QALY benefit accrues from this modification. As was the case for the indicator for those under 80, we also assumed the lowest level of compliance with anti-hypertensive therapy found in the literature and the lowest reported value for QALY gains from the different classes of anti-hypertensive medication. In addition we have assumed only half of the QALY gains seen for a population of 65 year olds, is seen for those over 80.

The actual proportion of those over the age of 80 with BP>140/90 who are suitable for anti-hypertension medication is unknown and so this was assumed. Our findings were sensitive to this value, as shown by sensitivity analysis of potential QALY gains per patient. Findings were also sensitive to relatively small increases in the cost per patient of delivering the indicator. However, it is reiterated that this is on a very pessimistic assumption set at baseline for effectiveness and costs.

We have also implicitly assumed that the benefit of anti-hypertensive medication is only included if BP falls below 150/90, whereas benefit will potentially be seen in any reduction in BP.

Finally it must be noted that we have not modelled treating hypertension to a target as no data were available to do this. However, we are confident that the approach we have taken indicates that the indicator is cost effective, on the basis that treatment of high BP is relatively cheap now that generic drugs are available and the potential health benefits are so great.

References

- [1] National Clinical Guideline Centre. The clinical management of primary hypertension in adults. London: Royal College of Physicians, 2011.
- [2] National Institute of Health and Clinical Excellence. Hypertension: Clinical management of primary hypertension in adults. 2011
- [3] Woolacott NF, Jones L, Forbes CA et al. The clinical effectiveness and cost effectiveness of bupropion and nicotine replacement therapy for smoking cessation: a systematic review and economic evaluation. Health Technol Assess 2002.
- [4] Unit Costs of Health & Social Care 2010. Personal Social Services Research Unit (PSSRU). Complied by Lesley Curtis. University of Kent.
- [5] Szucs TD, Waeber B, Tomonaga Y. Cost-effectiveness of antihypertensive treatment in 11 patients 80 years of age or older in Switzerland: an analysis of the HYVET study from a Swiss 12 perspective. Journal of Human Hypertension. 2010; 24(2):117-123.

Appendix A: Net Benefit Base Case Analysis

Pilot 5 - Hypertension Over 80: Net Benefit Analysis

Value per point achieved	£133.76	Societal value of a QALY	£25,000											
Number of practices	8,228													
Mean practice population	6,297													
Minimum threshold	60%	Baseline achievement	3.8%											
Maximum threshold	90%	Eligible population (mean % of practice population)	73.4%											
		Baseline achievement (mean % of eligible patients)												
Points	5	6	7	8	9	10	11	12	13	14	15	Cost-effectiveness estimates	£553	0.032
Expected Achievement	National totals												Change in treatment cost (£)	Change in QALYs
30%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£472,526,788	-27343
35%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£418,088,218	-24193
40%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£363,649,648	-21043
45%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£309,211,078	-17893
50%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£254,772,508	-14743
55%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£200,333,938	-11593
60%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£145,895,368	-8442
65%	£917	£1,101	£1,284	£1,467	£1,651	£1,834	£2,018	£2,201	£2,385	£2,568	£2,751	£0	-£91,456,798	-5292
70%	£1,834	£2,201	£2,568	£2,935	£3,302	£3,669	£4,035	£4,402	£4,769	£5,136	£5,503	£0	-£37,018,228	-2142
75%	£2,751	£3,302	£3,852	£4,402	£4,953	£5,503	£6,053	£6,603	£7,154	£7,704	£8,254	£0	£17,420,342	1008
80%	£3,669	£4,402	£5,136	£5,870	£6,603	£7,337	£8,071	£8,805	£9,538	£10,272	£11,006	£0	£71,858,912	4158
85%	£4,586	£5,503	£6,420	£7,337	£8,254	£9,171	£10,089	£11,006	£11,923	£12,840	£13,757	£0	£126,297,482	7308
90%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£0	£180,736,052	10459
95%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£0	£235,174,622	13609
100%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£0	£289,613,192	16759
Net Benefit (£000s)														
30%	-£211,056	-£211,056	-£211,056	-£211,056	-£211,056	-£211,056	-£211,056	-£211,056	-£211,056	-£211,056	-£211,056	-£211,056	Where the net benefit produces a non-negative outcome then it is cost effective for the NHS to adopt the indicator.	
35%	-£186,741	-£186,741	-£186,741	-£186,741	-£186,741	-£186,741	-£186,741	-£186,741	-£186,741	-£186,741	-£186,741	-£186,741		
40%	-£162,426	-£162,426	-£162,426	-£162,426	-£162,426	-£162,426	-£162,426	-£162,426	-£162,426	-£162,426	-£162,426	-£162,426		
45%	-£138,111	-£138,111	-£138,111	-£138,111	-£138,111	-£138,111	-£138,111	-£138,111	-£138,111	-£138,111	-£138,111	-£138,111		
50%	-£113,795	-£113,795	-£113,795	-£113,795	-£113,795	-£113,795	-£113,795	-£113,795	-£113,795	-£113,795	-£113,795	-£113,795		
55%	-£89,480	-£89,480	-£89,480	-£89,480	-£89,480	-£89,480	-£89,480	-£89,480	-£89,480	-£89,480	-£89,480	-£89,480		
60%	-£65,165	-£65,165	-£65,165	-£65,165	-£65,165	-£65,165	-£65,165	-£65,165	-£65,165	-£65,165	-£65,165	-£65,165		
65%	-£41,767	-£41,950	-£42,134	-£42,317	-£42,500	-£42,684	-£42,867	-£43,051	-£43,234	-£43,418	-£43,601	-£43,601		
70%	-£18,369	-£18,736	-£19,102	-£19,469	-£19,836	-£20,203	-£20,570	-£20,937	-£21,304	-£21,670	-£22,037	-£22,037		
75%	£5,029	£4,479	£3,929	£3,379	£2,828	£2,278	£1,728	£1,177	£627	£77	-£473	-£473		
80%	£28,428	£27,694	£26,960	£26,226	£25,493	£24,759	£24,025	£23,291	£22,558	£21,824	£21,090	£21,090		
85%	£51,826	£50,908	£49,991	£49,074	£48,157	£47,240	£46,323	£45,406	£44,488	£43,571	£42,654	£42,654		
90%	£75,224	£74,123	£73,023	£71,922	£70,821	£69,721	£68,620	£67,520	£66,419	£65,319	£64,218	£64,218		
95%	£99,539	£98,438	£97,338	£96,237	£95,137	£94,036	£92,935	£91,835	£90,734	£89,634	£88,533	£88,533		
100%	£123,854	£122,754	£121,653	£120,552	£119,452	£118,351	£117,251	£116,150	£115,050	£113,949	£112,848	£112,848		

Appendix B: Net Benefit Analysis Assuming 50% Increase in Incremental Costs per Patient

Pilot 5 - Hypertension Over 80: Net Benefit Analysis

Value per point achieved	£133.76										Societal value of a QALY	£25,000					
	8,228																
Number of practices	6,297																
Mean practice population																	
Minimum threshold	60%											Baseline achievement					
Maximum threshold	90%											Eligible population (mean % of practice population)					
												Baseline achievement (mean % of eligible patients)					
												Cost-effectiveness estimates					
												Incremental cost (£ per patient)					
Points	5	6	7	8	9	10	11	12	13	14	15	Incremental effect (QALYs per patient)	£830	0.032			
National totals																	
Expected Achievement	QOF payments (£000s)											Change in treatment cost (£)	Change in QALYs				
30%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£709,217,421	-27343				
35%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£627,510,345	-24193				
40%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£545,803,269	-21043				
45%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£464,096,192	-17893				
50%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£382,389,116	-14743				
55%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£300,682,040	-11593				
60%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£218,974,964	-8442				
65%	£917	£1,101	£1,284	£1,467	£1,651	£1,834	£2,018	£2,201	£2,385	£2,568	£2,751	-£137,267,888	-5292				
70%	£1,834	£2,201	£2,568	£2,935	£3,302	£3,669	£4,035	£4,402	£4,769	£5,136	£5,503	-£55,560,812	-2142				
75%	£2,751	£3,302	£3,852	£4,402	£4,953	£5,503	£6,053	£6,603	£7,154	£7,704	£8,254	£26,146,264	1008				
80%	£3,669	£4,402	£5,136	£5,870	£6,603	£7,337	£8,071	£8,805	£9,538	£10,272	£11,006	£107,853,340	4158				
85%	£4,586	£5,503	£6,420	£7,337	£8,254	£9,171	£10,089	£11,006	£11,923	£12,840	£13,757	£189,560,417	7308				
90%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£271,267,493	10459				
95%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£352,974,569	13609				
100%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£434,681,645	16759				
Net Benefit (£000s)																	
30%	£25,634	£25,634	£25,634	£25,634	£25,634	£25,634	£25,634	£25,634	£25,634	£25,634	£25,634	Where the net benefit produces a non-negative outcome then it is cost effective for the NHS to adopt the indicator.					
35%	£22,681	£22,681	£22,681	£22,681	£22,681	£22,681	£22,681	£22,681	£22,681	£22,681	£22,681	-£627,510,345					
40%	£19,728	£19,728	£19,728	£19,728	£19,728	£19,728	£19,728	£19,728	£19,728	£19,728	£19,728	-£55,560,812					
45%	£16,775	£16,775	£16,775	£16,775	£16,775	£16,775	£16,775	£16,775	£16,775	£16,775	£16,775	-£464,096,192					
50%	£13,821	£13,821	£13,821	£13,821	£13,821	£13,821	£13,821	£13,821	£13,821	£13,821	£13,821	-£382,389,116					
55%	£10,868	£10,868	£10,868	£10,868	£10,868	£10,868	£10,868	£10,868	£10,868	£10,868	£10,868	-£300,682,040					
60%	£7,915	£7,915	£7,915	£7,915	£7,915	£7,915	£7,915	£7,915	£7,915	£7,915	£7,915	-£218,974,964					
65%	£4,044	£3,861	£3,677	£3,494	£3,311	£3,127	£2,944	£2,760	£2,577	£2,393	£2,210	-£137,267,888					
70%	£174	-£193	-£560	-£927	-£1,294	-£1,660	-£2,027	-£2,394	-£2,761	-£3,128	-£3,495	When this is the case, the cells are highlighted with a yellow background.					
75%	-£3,696	-£4,247	-£4,797	-£5,347	-£5,898	-£6,448	-£6,998	-£7,549	-£8,099	-£8,649	-£9,199						
80%	-£7,567	-£8,301	-£9,034	-£9,768	-£10,502	-£11,235	-£11,969	-£12,703	-£13,437	-£14,170	-£14,904						
85%	-£11,437	-£12,354	-£13,272	-£14,189	-£15,106	-£16,023	-£16,940	-£17,857	-£18,775	-£19,692	-£20,609						
90%	-£15,308	-£16,408	-£17,509	-£18,609	-£19,710	-£20,811	-£21,911	-£23,012	-£24,112	-£25,213	-£26,314						
95%	-£18,261	-£19,362	-£20,462	-£21,563	-£22,663	-£23,764	-£24,864	-£25,965	-£27,066	-£28,166	-£29,267						
100%	-£21,214	-£22,315	-£23,415	-£24,516	-£25,617	-£26,717	-£27,818	-£28,918	-£30,019	-£31,119	-£32,220						

Appendix C: Net Benefit Analysis Assuming 50% Reduction in Utility Gains Per Patient

Pilot 5 - Hypertension Over 80: Net Benefit Analysis

Value per point achieved	£133.76	Societal value of a QALY	£25,000										
Number of practices	8,228												
Mean practice population	6,297												
Minimum threshold	60%	Baseline achievement	Cost-effectiveness estimates										
Maximum threshold	90%	Eligible population (mean % of practice population)	Incremental cost (£ per patient)										
		Baseline achievement (mean % of eligible patients)	Incremental effect (QALYs per patient)										
Points	5	6	7	8	9	10	11	12	13	14	15		
Expected Achievement	National totals											Change in treatment cost (£)	Change in QALYs
	QOF payments (£000s)												
30%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£472,526,788	-13672
35%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£418,088,218	-12097
40%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£363,649,648	-10522
45%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£309,211,078	-8946
50%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£254,772,508	-7371
55%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£200,333,938	-5796
60%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£145,895,368	-4221
65%	£917	£1,101	£1,284	£1,467	£1,651	£1,834	£2,018	£2,201	£2,385	£2,568	£2,751	-£91,456,798	-2646
70%	£1,834	£2,201	£2,568	£2,935	£3,302	£3,669	£4,035	£4,402	£4,769	£5,136	£5,503	-£37,018,228	-1071
75%	£2,751	£3,302	£3,852	£4,402	£4,953	£5,503	£6,053	£6,603	£7,154	£7,704	£8,254	£17,420,342	504
80%	£3,669	£4,402	£5,136	£5,870	£6,603	£7,337	£8,071	£8,805	£9,538	£10,272	£11,006	£71,858,912	2079
85%	£4,586	£5,503	£6,420	£7,337	£8,254	£9,171	£10,089	£11,006	£11,923	£12,840	£13,757	£126,297,482	3654
90%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£180,736,052	5229
95%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£235,174,622	6804
100%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£289,613,192	8379
	Net Benefit (£000s)												
30%	£130,735	£130,735	£130,735	£130,735	£130,735	£130,735	£130,735	£130,735	£130,735	£130,735	£130,735		
35%	£115,674	£115,674	£115,674	£115,674	£115,674	£115,674	£115,674	£115,674	£115,674	£115,674	£115,674		
40%	£100,612	£100,612	£100,612	£100,612	£100,612	£100,612	£100,612	£100,612	£100,612	£100,612	£100,612		
45%	£85,550	£85,550	£85,550	£85,550	£85,550	£85,550	£85,550	£85,550	£85,550	£85,550	£85,550		
50%	£70,489	£70,489	£70,489	£70,489	£70,489	£70,489	£70,489	£70,489	£70,489	£70,489	£70,489		
55%	£55,427	£55,427	£55,427	£55,427	£55,427	£55,427	£55,427	£55,427	£55,427	£55,427	£55,427		
60%	£40,365	£40,365	£40,365	£40,365	£40,365	£40,365	£40,365	£40,365	£40,365	£40,365	£40,365		
65%	£24,386	£24,203	£23,836	£23,653	£23,469	£23,286	£23,102	£22,919	£22,736	£22,552			
70%	£8,408	£8,041	£7,674	£7,307	£6,940	£6,573	£6,206	£5,840	£5,473	£5,106	£4,739		
75%	-£7,571	-£8,121	-£8,672	-£9,222	-£9,772	-£10,323	-£10,873	-£11,423	-£11,973	-£12,524	-£13,074		
80%	-£23,550	-£24,284	-£25,017	-£25,751	-£26,485	-£27,219	-£27,952	-£28,686	-£29,420	-£30,153	-£30,887		
85%	-£39,529	-£40,446	-£41,363	-£42,280	-£43,197	-£44,115	-£45,032	-£45,949	-£46,866	-£47,783	-£48,700		
90%	-£55,508	-£56,608	-£57,709	-£58,809	-£59,910	-£61,011	-£62,111	-£63,212	-£64,312	-£65,413	-£66,513		
95%	-£70,569	-£71,670	-£72,770	-£73,871	-£74,972	-£76,072	-£77,173	-£78,273	-£79,374	-£80,474	-£81,575		
100%	-£85,631	-£86,732	-£87,832	-£88,933	-£90,033	-£91,134	-£92,234	-£93,335	-£94,436	-£95,536	-£96,637		

Where the net benefit produces a non-negative outcome then it is **cost effective** for the NHS to adopt the indicator.

When this is the case, the cells are highlighted with a yellow background.

Appendix D: Net Benefit Base Case Analysis

Pilot 5 - Hypertension Over 80: Net Benefit Analysis

Value per point achieved	£133.76	Societal value of a QALY	£20,000										
Number of practices	8,228												
Mean practice population	6,297												
Minimum threshold	60%	Baseline achievement	Cost-effectiveness estimates										
Maximum threshold	90%	Eligible population (mean % of practice population)	Incremental cost (£ per patient)										
		Baseline achievement (mean % of eligible patients)	Incremental effect (QALYs per patient)										
Points	5	6	7	8	9	10	11	12	13	14	15		
National totals													
Expected Achievement	QOF payments (£000s)											Change in treatment cost (£)	Change in QALYs
30%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£472,526,788	-27343
35%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£418,088,218	-24193
40%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£363,649,648	-21043
45%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£309,211,078	-17893
50%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£254,772,508	-14743
55%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£200,333,938	-11593
60%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£145,895,368	-8442
65%	£917	£1,101	£1,284	£1,467	£1,651	£1,834	£2,018	£2,201	£2,385	£2,568	£2,751	-£91,456,798	-5292
70%	£1,834	£2,201	£2,568	£2,935	£3,302	£3,669	£4,035	£4,402	£4,769	£5,136	£5,503	-£37,018,228	-2142
75%	£2,751	£3,302	£3,852	£4,402	£4,953	£5,503	£6,053	£6,603	£7,154	£7,704	£8,254	£17,420,342	1008
80%	£3,669	£4,402	£5,136	£5,870	£6,603	£7,337	£8,071	£8,805	£9,538	£10,272	£11,006	£71,858,912	4158
85%	£4,586	£5,503	£6,420	£7,337	£8,254	£9,171	£10,089	£11,006	£11,923	£12,840	£13,757	£126,297,482	7308
90%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£180,736,052	10459
95%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£235,174,622	13609
100%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£289,613,192	16759
Net Benefit (£000s)													
30%	-£74,340	-£74,340	-£74,340	-£74,340	-£74,340	-£74,340	-£74,340	-£74,340	-£74,340	-£74,340	-£74,340		
35%	-£65,775	-£65,775	-£65,775	-£65,775	-£65,775	-£65,775	-£65,775	-£65,775	-£65,775	-£65,775	-£65,775		
40%	-£57,211	-£57,211	-£57,211	-£57,211	-£57,211	-£57,211	-£57,211	-£57,211	-£57,211	-£57,211	-£57,211		
45%	-£48,646	-£48,646	-£48,646	-£48,646	-£48,646	-£48,646	-£48,646	-£48,646	-£48,646	-£48,646	-£48,646		
50%	-£40,082	-£40,082	-£40,082	-£40,082	-£40,082	-£40,082	-£40,082	-£40,082	-£40,082	-£40,082	-£40,082		
55%	-£31,517	-£31,517	-£31,517	-£31,517	-£31,517	-£31,517	-£31,517	-£31,517	-£31,517	-£31,517	-£31,517		
60%	-£22,953	-£22,953	-£22,953	-£22,953	-£22,953	-£22,953	-£22,953	-£22,953	-£22,953	-£22,953	-£22,953		
65%	-£15,305	-£15,489	-£15,672	-£15,856	-£16,039	-£16,223	-£16,406	-£16,589	-£16,773	-£16,956	-£17,140		
70%	-£7,658	-£8,025	-£8,392	-£8,759	-£9,126	-£9,492	-£9,859	-£10,226	-£10,593	-£10,960	-£11,327		
75%	-£11	-£561	-£1,111	-£1,662	-£2,212	-£2,762	-£3,313	-£3,863	-£4,413	-£4,963	-£5,514		
80%	£7,637	£6,903	£6,169	£5,435	£4,702	£3,968	£3,234	£2,500	£1,767	£1,033	£299		
85%	£15,284	£14,367	£13,450	£12,532	£11,615	£10,698	£9,781	£8,864	£7,947	£7,030	£6,112		
90%	£22,931	£21,831	£20,730	£19,629	£18,529	£17,428	£16,328	£15,227	£14,127	£13,026	£11,925		
95%	£31,496	£30,395	£29,294	£28,194	£27,093	£25,993	£24,892	£23,792	£22,691	£21,590	£20,490		
100%	£40,060	£38,960	£37,859	£36,758	£35,658	£34,557	£33,457	£32,356	£31,256	£30,155	£29,054		

Where the net benefit produces a non-negative outcome then it is **cost effective** for the NHS to adopt the indicator.

When this is the case, the cells are highlighted with a yellow background.

Appendix E: Net Benefit Analysis Assuming 50% Increase in Incremental Costs per Patient

Pilot 5 - Hypertension Over 80: Net Benefit Analysis

Value per point achieved	£133.76	Societal value of a QALY	£20,000										
Number of practices	8,228												
Mean practice population	6,297												
Minimum threshold	60%	Baseline achievement	Cost-effectiveness estimates										
Maximum threshold	90%	Eligible population (mean % of practice population)	Incremental cost (£ per patient)										
		Baseline achievement (mean % of eligible patients)	Incremental effect (QALYs per patient)										
Points	5	6	7	8	9	10	11	12	13	14	15		
National totals													
Expected Achievement	QOF payments (£000s)										Change in treatment cost (£)	Change in QALYs	
30%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£709,217,421	-27343
35%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£627,510,345	-24193
40%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£545,803,269	-21043
45%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£464,096,192	-17893
50%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£382,389,116	-14743
55%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£300,682,040	-11593
60%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£218,974,964	-8442
65%	£917	£1,101	£1,284	£1,467	£1,651	£1,834	£2,018	£2,201	£2,385	£2,568	£2,751	-£137,267,888	-5292
70%	£1,834	£2,201	£2,568	£2,935	£3,302	£3,669	£4,035	£4,402	£4,769	£5,136	£5,503	-£55,560,812	-2142
75%	£2,751	£3,302	£3,852	£4,402	£4,953	£5,503	£6,053	£6,603	£7,154	£7,704	£8,254	£26,146,264	1008
80%	£3,669	£4,402	£5,136	£5,870	£6,603	£7,337	£8,071	£8,805	£9,538	£10,272	£11,006	£107,853,340	4158
85%	£4,586	£5,503	£6,420	£7,337	£8,254	£9,171	£10,089	£11,006	£11,923	£12,840	£13,757	£189,560,417	7308
90%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£271,267,493	10459
95%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£352,974,569	13609
100%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£434,681,645	16759
Net Benefit (£000s)													
30%	£162,351	£162,351	£162,351	£162,351	£162,351	£162,351	£162,351	£162,351	£162,351	£162,351	£162,351	Where the net benefit produces a non-negative outcome then it is cost effective for the NHS to adopt the indicator.	
35%	£143,647	£143,647	£143,647	£143,647	£143,647	£143,647	£143,647	£143,647	£143,647	£143,647	£143,647	When this is the case, the cells are highlighted with a yellow background.	
40%	£124,943	£124,943	£124,943	£124,943	£124,943	£124,943	£124,943	£124,943	£124,943	£124,943	£124,943		
45%	£106,239	£106,239	£106,239	£106,239	£106,239	£106,239	£106,239	£106,239	£106,239	£106,239	£106,239		
50%	£87,535	£87,535	£87,535	£87,535	£87,535	£87,535	£87,535	£87,535	£87,535	£87,535	£87,535		
55%	£68,831	£68,831	£68,831	£68,831	£68,831	£68,831	£68,831	£68,831	£68,831	£68,831	£68,831		
60%	£50,127	£50,127	£50,127	£50,127	£50,127	£50,127	£50,127	£50,127	£50,127	£50,127	£50,127		
65%	£30,506	£30,322	£30,139	£29,955	£29,772	£29,588	£29,405	£29,222	£29,038	£28,855	£28,671		
70%	£10,884	£10,518	£10,151	£9,784	£9,417	£9,050	£8,683	£8,316	£7,950	£7,583	£7,216		
75%	-£8,737	-£9,287	-£9,837	-£10,388	-£10,938	-£11,488	-£12,038	-£12,589	-£13,139	-£13,689	-£14,240		
80%	-£28,358	-£29,092	-£29,825	-£30,559	-£31,293	-£32,027	-£32,760	-£33,494	-£34,228	-£34,961	-£35,695		
85%	-£47,979	-£48,896	-£49,813	-£50,731	-£51,648	-£52,565	-£53,482	-£54,399	-£55,316	-£56,233	-£57,151		
90%	-£67,600	-£68,701	-£69,801	-£70,902	-£72,003	-£73,103	-£74,204	-£75,304	-£76,405	-£77,505	-£78,606		
95%	-£86,304	-£87,405	-£88,505	-£89,606	-£90,707	-£91,807	-£92,908	-£94,008	-£95,109	-£96,209	-£97,310		
100%	-£105,008	-£106,109	-£107,209	-£108,310	-£109,411	-£110,511	-£111,612	-£112,712	-£113,813	-£114,914	-£116,014		

Appendix F: Net Benefit Analysis Assuming 50% Reduction in Utility Gains Per Patient

Pilot 5 - Hypertension Over 80: Net Benefit Analysis

Value per point achieved	£133.76	Societal value of a QALY	£20,000										
Number of practices	8,228												
Mean practice population	6,297												
Minimum threshold	60%	Baseline achievement	Cost-effectiveness estimates										
Maximum threshold	90%	Eligible population (mean % of practice population)	Incremental cost (£ per patient)										
		Baseline achievement (mean % of eligible patients)	Incremental effect (QALYs per patient)										
Points	5	6	7	8	9	10	11	12	13	14	15		
Expected Achievement	National totals											Change in treatment cost (£)	Change in QALYs
	QOF payments (£000s)												
30%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£472,526,788	-13672
35%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£418,088,218	-12097
40%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£363,649,648	-10522
45%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£309,211,078	-8946
50%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£254,772,508	-7371
55%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£200,333,938	-5796
60%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	£0	-£145,895,368	-4221
65%	£917	£1,101	£1,284	£1,467	£1,651	£1,834	£2,018	£2,201	£2,385	£2,568	£2,751	-£91,456,798	-2646
70%	£1,834	£2,201	£2,568	£2,935	£3,302	£3,669	£4,035	£4,402	£4,769	£5,136	£5,503	-£37,018,228	-1071
75%	£2,751	£3,302	£3,852	£4,402	£4,953	£5,503	£6,053	£6,603	£7,154	£7,704	£8,254	£17,420,342	504
80%	£3,669	£4,402	£5,136	£5,870	£6,603	£7,337	£8,071	£8,805	£9,538	£10,272	£11,006	£71,858,912	2079
85%	£4,586	£5,503	£6,420	£7,337	£8,254	£9,171	£10,089	£11,006	£11,923	£12,840	£13,757	£126,297,482	3654
90%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£180,736,052	5229
95%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£235,174,622	6804
100%	£5,503	£6,603	£7,704	£8,805	£9,905	£11,006	£12,106	£13,207	£14,308	£15,408	£16,509	£289,613,192	8379
	Net Benefit (£000s)												
30%	£199,094	£199,094	£199,094	£199,094	£199,094	£199,094	£199,094	£199,094	£199,094	£199,094	£199,094		
35%	£176,157	£176,157	£176,157	£176,157	£176,157	£176,157	£176,157	£176,157	£176,157	£176,157	£176,157		
40%	£153,219	£153,219	£153,219	£153,219	£153,219	£153,219	£153,219	£153,219	£153,219	£153,219	£153,219		
45%	£130,282	£130,282	£130,282	£130,282	£130,282	£130,282	£130,282	£130,282	£130,282	£130,282	£130,282		
50%	£107,345	£107,345	£107,345	£107,345	£107,345	£107,345	£107,345	£107,345	£107,345	£107,345	£107,345		
55%	£84,408	£84,408	£84,408	£84,408	£84,408	£84,408	£84,408	£84,408	£84,408	£84,408	£84,408		
60%	£61,471	£61,471	£61,471	£61,471	£61,471	£61,471	£61,471	£61,471	£61,471	£61,471	£61,471		
65%	£37,617	£37,434	£37,250	£37,067	£36,883	£36,700	£36,517	£36,333	£36,150	£35,966	£35,783		
70%	£13,763	£13,396	£13,029	£12,662	£12,295	£11,929	£11,562	£11,195	£10,828	£10,461	£10,094		
75%	-£10,091	-£10,642	-£11,192	-£11,742	-£12,292	-£12,843	-£13,393	-£13,943	-£14,494	-£15,044	-£15,594		
80%	-£33,945	-£34,679	-£35,413	-£36,147	-£36,880	-£37,614	-£38,348	-£39,082	-£39,815	-£40,549	-£41,283		
85%	-£57,800	-£58,717	-£59,634	-£60,551	-£61,468	-£62,385	-£63,303	-£64,220	-£65,137	-£66,054	-£66,971		
90%	-£81,654	-£82,754	-£83,855	-£84,956	-£86,056	-£87,157	-£88,257	-£89,358	-£90,458	-£91,559	-£92,660		
95%	-£104,591	-£105,692	-£106,792	-£107,893	-£108,993	-£110,094	-£111,194	-£112,295	-£113,396	-£114,496	-£115,597		
100%	-£127,528	-£128,629	-£129,729	-£130,830	-£131,930	-£133,031	-£134,131	-£135,232	-£136,333	-£137,433	-£138,534		

Where the net benefit produces a non-negative outcome then it is **cost effective** for the NHS to adopt the indicator.

When this is the case, the cells are highlighted with a yellow background.