UNIVERSITY OF BIRMINGHAM AND YORK HEALTH **ECONOMICS CONSORTIUM**

(NICE EXTERNAL CONTRACTOR)

Health economic report on piloted indicator

Pilot QOF indicator: The percentage of patients with a new diagnosis of hypertension in the preceding 1st April to 31st March who have a record of urinary albumin: creatinine ratio test in the three months before or after the date of entry to the hypertension register.

Potential output: Recommendations for NICE Menu

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Introduction

This briefing paper presents a cost-effectiveness analysis for a potential indicator from pilot 8 of the NICE Quality and Outcomes Framework (QOF) indicator development programme:

The percentage of patients with a new diagnosis of hypertension in the preceding 1st April to 31st March who have a record of urinary albumin: creatinine ratio test in the three months before or after the date of entry to the hypertension register.

The economic analysis is based on evidence of delivery costs and evidence of benefits expressed as quality-adjusted life years (QALYs). Additionally, the economic analysis takes account of potential QOF payments based on a range of available QOF points and a range of levels of achievement.

The possible range of QOF points for this analysis was agreed with the economic subgroup of the NICE QOF Advisory Committee prior to the analysis being undertaken.

A net benefit approach is used whereby an indicator is considered cost-effective when net benefit is greater than zero for any given level of achievement and available QOF points:

Net benefit = monetised benefit – delivery cost – QOF payment.

For this indicator, the net benefit analysis is applied with a lifetime horizon at baseline.

The objective is to evaluate whether the proposed indicator represents a costeffective use of NHS resources. This report provides the QOF Advisory Committee with information on whether the indicator is economically justifiable, and will inform the Committee's decision making on recommendations about the indicator.

Economic Rationale for the Indicator

People with blood pressure persistently over 140/90mmHg are defined as being hypertensive. High blood pressure can be caused by, or causal to, a number of other health conditions, notably organ damage through chronic kidney disease, coronary heart disease or heart failure and urological cancer [1]. Testing newly diagnosed hypertensive patients for target organ damage linked to hypertension could detect kidney damage at a stage where treatment could be more effective and cost-effective than treating the hypertension alone.

Summary of assumptions

- The indicator is designed to identify potential kidney damage in people newly diagnosed with hypertension;
- The identification of kidney damage would lead to some form of treatment.

Evidence on Delivery Cost of the Indicator

The NICE guideline on hypertension states that a range of tests should be conducted on patients newly diagnosed with hypertension to ensure the hypertension is not linked to organ damage [1]. The guidance recommends that all people with hypertension should have a urine sample tested for the albumin:creatinine ratio (ACR) and for haematuria. Both of these tests are reported to be specifically for renal disease and reference is made to the NICE guideline on chronic kidney disease (CKD) [2].

The CKD guideline incorporated an economic model on the cost-effectiveness of albumin:creatinine testing for CKD [2]. The model incorporated all costs included in testing, and potentially treating, hypertension-related CKD, including GP time to administer the tests. The net total lifetime cost in the baseline analysis of testing and any resultant treatment for a 60-year old woman with hypertension but without diabetes was £517. The costs for other patient groups were not provided but it is assumed that the costs used are generalisable to all eligible patients. This is on the

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basis that the costs of treatment for a 60-year old woman would be more than for younger patients on average but less than older patients on average.

The study used prices from 2006/07. We have increased this by inflation since the publication of the report to £611. This is a cautious approach because the healthcare costs averted through early diagnosis have risen by inflation, as well as the costs of delivering testing and treatment. In our scenario analysis the total costs of delivering testing and treatment were varied by +-50%.

Baseline costs

- The baseline costs are taken from the NICE CKD guideline;
- The incremental lifetime cost of undertaking albumin:creatinine testing on hypertensive patients at baseline is £611 per patient.

Evidence on the Benefits of the Indicator

The NICE CKD model also provides an estimate of the QALY gain from albumin:creatinine ratio testing in people with hypertension. The estimated lifetime QALY gain for tested, as opposed to untested, patients (again for a woman aged 60 with hypertension and no diabetes) was 0.1005 QALYs.

In the original NICE model detailed results were not provided for other patient groups. However, for both men and women under the age of 40 the analysis found that the testing strategy was both more effective for patients and saved costs compared with no testing. The testing strategy was cost-effective for men and women aged 60 and 80 at £20,000/QALY, so it can be assumed that the base case gives a reasonably representative result for the relevant population.

As with the costs, we have used scenario analysis to explore the impact on our findings of changing QALY gains by +-50%.

Baseline benefits

- It has been assumed that the benefits identified for women aged 60 in the
 CKD cost model are generalisable across the relevant population;
- The incremental lifetime baseline QALY gain of undertaking albumin:creatinine testing on hypertensive patients at baseline is 0.1005 per patient.

Eligible Population

The eligible population (i.e. people who would make up the indicator denominator) is all patients who have not already been diagnosed with hypertension and who have an initial clinic blood pressure reading of 140/90 or higher. In the NICE costing report for the hypertension guidance an incidence rate of 0.78% of patients, over the age of 18, was suggested [3]. According to the Office of National Statistics (ONS) 78.8% of the population in the United Kingdom was over the age of 18 in 2012 [4]. Combining these two percentages provides an incidence rate of newly diagnosed hypertension in an average GP practice population of 0.61%. This percentage was used at baseline and was tested with sensitivity analysis between values of 0.31% and 0.91% (ie 50% higher or lower than the baseline population).

Baseline Level of Achievement

Pilot 8 data showed the indicator was achieved for 23% of eligible patients at the beginning of the pilot. Because it is likely that a QOF indicator would be implemented at higher achievement thresholds, we carried out an alternative analysis to explore the use of 45% as the minimum threshold for achievement.

Population

In the base case, the economic analysis was based on the total practice population registered with practices in England, that is, 8,088 practices with an average practice size of 6,891 [5].

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Table 1: Practice information for UK countries, 2012

Country	Number of practices	Number of patients
England	8,088	6,891
Scotland	991	5,586
Wales	474	6,694
Northern Ireland	351	5,406

QOF Payments

Each QOF point is assumed to result in a payment of £156.92. This was the value per point in England during 2013/14 (source: NHS Employers).

Value of a QALY

The expected QALY gain from implementing this indicator was costed at £20,000 per QALY. This is based on the bottom of the range £20,000 to £30,000, below which NICE generally considers an intervention to be cost-effective.

QOF Points

The economic analysis considers the cost-effectiveness of incentivising the proposed activity over a range of QOF points.

In the base case analysis, 5 points were allocated to the proposed indicator. This reflects the fact the current QOF includes an indicator for the use of the urine albumin:creatinine ratio test for chronic kidney disease (CKD004), for which there are 6 points available.

Sensitivity analysis explored the lower and upper bounds of 2 and 10 points respectively, as agreed with the economic subgroup of the NICE QOF Advisory Committee.

Thresholds

The pilot 8 GP practices showed performance mid-way through the pilot of between 0% and 60%. We used a threshold range of 45% to 80% as this is consistent with other indicators in the QOF.

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

Under the baseline assumptions of incremental delivery cost (£611), incremental benefit (0.1005 QALYs with a value of £20,000 per QALY) and eligible population (0.61%), the net benefit analysis suggests that the indicator is highly cost-effective, with QOF payments at 5 points justifiable on economic grounds (Appendix A). Under our conservative assumptions, the value of the increase in quality of life offered by testing outweighs the additional healthcare costs of advice and treatment in a net benefit analysis if the value per QALY is assumed to be £20,000.

The indicator remains justifiable at baseline and 80% achievement on economic grounds at maximum of 217 points or when the value per QALY falls to £6,400.

Findings are insensitive to a 50% increase in costs (Appendix B), a 50% decrease in the QALY gain per patient (Appendix C) or a 50% decrease in the eligible population (Appendix D).

The indicator could not be recommended at 5 points and 80% achievement if:

- The intervention increases in cost by 224% to £1,978;
- The QALY gain per patient falls 68% to 0.032;
- The eligible population falls 98% to 0.01%.

If the assumptions underpinning this analysis hold, then there is strong economic evidence that the indicator is cost-effective at 5 points if the value per QALY is £20,000. There is evidence under our assumptions to offer up to the 10 points considered in the analysis for the indicator.

Discussion

Under the conservative baseline assumptions and the sensitivity analysis applied there is robust evidence that the indicator is likely to be cost-effective at 5 points.

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The primary reason for the cost-effective findings is the substantial potential QALY gain from identifying patients with CKD at an earlier stage than with no testing. This

QALY benefit far outweighs the costs of testing and treatment.

There is an existing CKD indicator in the QOF currently that could lead to double

payment:

CKD004. The percentage of patients on the CKD register whose notes have a record

of a urine albumin:creatinine ratio (or protein:creatinine ratio) test in the preceding 12

months.

As the proportion of people with newly diagnosed hypertension who also have CKD

is likely to be quite low, the potential double payment issue is not a particular

concern.

References

[1] National Institute for Health and Care Excellence. Hypertension: Clinical

management of primary hypertension in adults. 2011

[2] National Institute for Health and Care Excellence. Chronic kidney disease:

Early identification and management of chronic kidney disease in adults in

primary and secondary care. 2008

[3] National Institute for Health and Care Excellence. Hypertension: Costing

report. Implementing NICE guidance. 2011

[4] Office for National Statistics. Population Estimates for UK, England and

Wales, Scotland and Northern Ireland, Mid-2011 and Mid-2012.

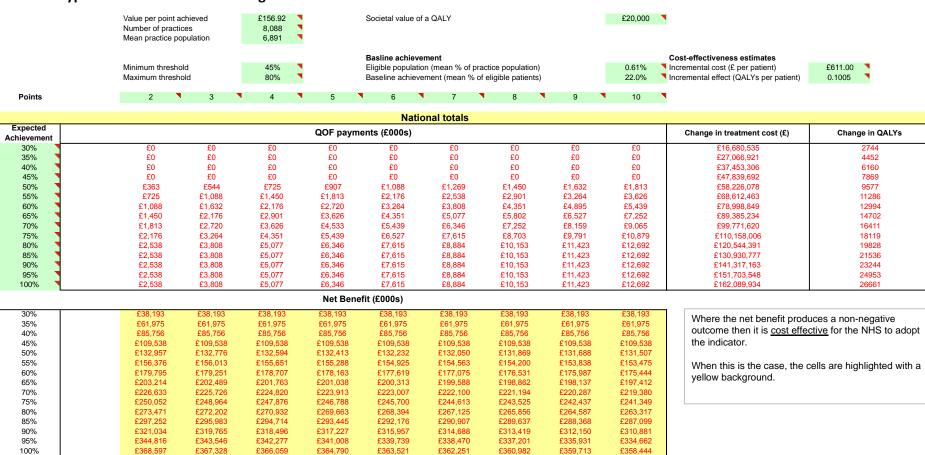
[5] General practice trends in the UK. NHS Information Centre. Published 23

January 2013.

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Appendix A: Net Benefit Base Case Analysis (£20k/QALY)

Pilot BB Hypertension TOD BBACR Testing



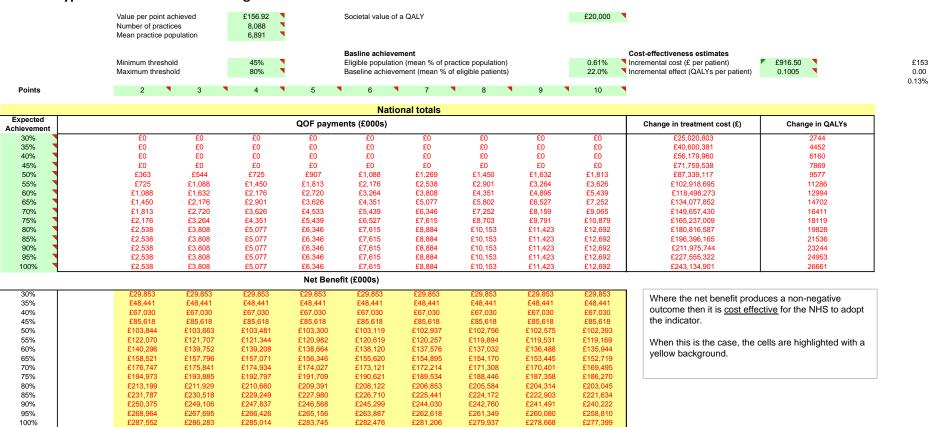
Primary Care Quality and Outcomes Framework Advisory Committee 11 and 12 June 2014

Agenda item 15d: Hypertension: Target organ damage – YHEC report

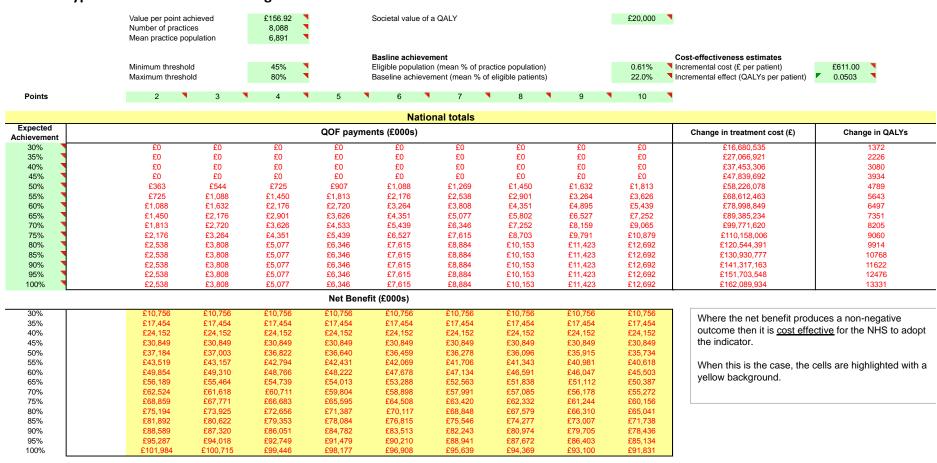
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Appendix B: Net Benefit Analysis Assuming 50% Increase in Incremental Costs per Patient (£20k/QALY)

Pilot 28 2 Hypertension 2 TOD 2 A CR 2 Testing



Appendix C: Net Benefit Analysis Assuming 50% Decrease in Utility Gains Per Patient (£20k/QALY)



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Agenda item 15d: Hypertension: Target organ damage – YHEC report

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Appendix D: Net Benefit Analysis Assuming 50% Decrease in Eligible Population (£20k/QALY)

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Pilot BB Hypertension TOD BACR Testing

	Value per point a Number of practi Mean practice po	ices	£156.92 8,088 6,891	8,088				£20,000	£20,000 \		
	Minimum thresho Maximum thresh		45% 80%		Basline achievement Eligible population (mean % of practice population) Baseline achievement (mean % of eligible patients)				© 0.31% 22.0%	Cost-effectiveness estimates Incremental cost (£ per patient) Incremental effect (QALYs per patient)	£611.00
Points	2	3 .	₹ 4 ₹	5	• 6	7	₹ 8	9	10	•	
					Nati	ional totals					
Expected Achievement				QOF paym	ents (£000s)					Change in treatment cost (£)	Change in QALYs
30%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£8,340,268	1372
35%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£13,533,460	2226
40%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£18,726,653	3080
45%	£0	£0	£0	£0	£0	£0	£0	£0	£0	£23,919,846	3934
50%	£363	£544	£725	£907	£1,088	£1,269	£1,450	£1,632	£1,813	£29,113,039	4789
55%	£725	£1,088	£1,450	£1,813	£2,176	£2,538	£2,901	£3,264	£3,626	£34,306,232	5643
60%	£1,088	£1,632	£2,176	£2,720	£3,264	£3,808	£4,351	£4,895	£5,439	£39,499,424	6497
65%	£1,450	£2,176	£2,901	£3,626	£4,351	£5,077	£5,802	£6,527	£7,252	£44,692,617	7351
70%	£1,813	£2,720	£3,626	£4,533	£5,439	£6,346	£7,252	£8,159	£9,065	£49,885,810	8205
75%	£2,176	£3,264	£4,351	£5,439	£6,527	£7,615	£8,703	£9,791	£10,879	£55,079,003	9060
80%	£2,538	£3,808	£5,077	£6,346	£7,615	£8,884	£10,153	£11,423	£12,692	£60,272,196	9914
85%	£2,538	£3,808	£5,077	£6,346	£7,615	£8,884	£10,153	£11,423	£12,692	£65,465,388	10768
90%	£2,538	£3,808	£5,077	£6,346	£7,615	£8,884	£10,153	£11,423	£12,692	£70,658,581	11622
95%	£2,538	£3,808	£5,077	£6,346	£7,615	£8,884	£10,153	£11,423	£12,692	£75,851,774	12476
100%	£2,538	£3,808	£5,077	£6,346	£7,615	£8,884	£10,153	£11,423	£12,692	£81,044,967	13331
				Net Ben	efit (£000s)						
30%	£19,097	£19,097	£19,097	£19,097	£19,097	£19,097	£19,097	£19,097	£19,097	Where the net benefit produ	uaaa a nan nagatiya
35%	£30,987	£30,987	£30,987	£30,987	£30,987	£30,987	£30,987	£30,987	£30,987	<u> </u>	Ü
40%	£42,878	£42,878	£42,878	£42,878	£42,878	£42,878	£42,878	£42,878	£42,878	outcome then it is cost effe	<u>ctive</u> for the NHS to adopt
45%	£54,769	£54,769	£54,769	£54,769	£54,769	£54,769	£54,769	£54,769	£54,769	the indicator.	
50%	£66,297	£66,116	£65,935	£65,753	£65,572	£65,391	£65,209	£65,028	£64,847		
55%	£77,825	£77,463	£77,100	£76,738	£76,375	£76,012	£75,650	£75,287	£74,924	When this is the case, the	cells are highlighted with a
60%	£89,354	£88,810	£88,266	£87,722	£87,178	£86,634	£86,090	£85,546	£85,002	yellow background.	
65%	£100,882	£100,156	£99,431	£98,706	£97,981	£97,256	£96,530	£95,805	£95,080	yellow background.	
70%	£112,410	£111,503	£110,597	£109,690	£108,784	£107,877	£106,971	£106,064	£105,157		
75%	£123,938	£122,850	£121,762	£120,674	£119,587	£118,499	£117,411	£116,323	£115,235		
80%	£135,466	£134,197	£132,928	£131,659	£130,390	£129,120	£127,851	£126,582	£125,313		
85%	£147,357	£146,088	£144,819	£143,550	£142,280	£141,011	£139,742	£138,473	£137,204		
90%	£159,248	£157,979	£156,710	£155,440	£154,171	£152,902	£151,633	£150,364	£149,094		
95%	£171,139	£169,869	£168,600	£167,331	£166,062	£164,793	£163,524	£162,254	£160,985		
100%	£183,029	£181,760	£180,491	£179,222	£177,953	£176,684	£175,414	£174,145	£172,876		