UNIVERSITY OF MANCHESTER NATIONAL PRIMARY CARE RESEARCH AND DEVELOPMENT CENTRE AND UNIVERSITY OF YORK HEALTH ECONOMICS CONSORTIUM (NICE EXTERNAL CONTRACTOR)

Health economic report on piloted indicator(s)

QOF indicator area: Cardiovascular disease - primary prevention

Potential output: Recommendations for NICE Menu

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Introduction

This briefing paper is intended to provide a summary of the economic evidence generated on the proposed pilot three cardiovascular disease primary prevention indicator. 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

NM26: In those patients with a new diagnosis of hypertension aged 30-74 years, recorded between the preceding 1 April to 31 March (excluding those with pre-existing CHD, diabetes, stroke and/or TIA), who have a recorded CVD risk assessment score (using an agreed risk assessment tool) of ≥20% in the preceding 15 months: the percentage who are currently treated with statins (unless there is a contraindication)

Economic rationale for the indicator

Cardiovascular disease (CVD) is the main cause of mortality in the UK [1]. CVD is also a significant cause of premature death and increased morbidity [1]. Age is the main determinant of CVD and predominantly affects people over 50 years of age. Other risk factors include smoking, raised blood pressure and raised cholesterol.

NICE guidance recommends a systematic approach to the identification of people aged 40-74 years who are likely to be at high risk prior to a formal risk assessment [2]. NICE recommends statin therapy as part of the management strategy for the primary prevention of CVD for adults who have a 20% or greater 10-year risk of developing CVD [2].

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. Evidence is available to provide potential insight on the health benefits (and costs) of prescribing statin therapy in patients at high risk of CVD (without pre-existing CHD, diabetes, stroke and/or TIA), measured by quality-adjusted life years (QALYs). However, the published data lack the detail necessary for a direct estimate of the cost-effectiveness of QOF payments.

A recent Health Technology Assessment examined the cost effectiveness of statins in the primary prevention of CVD in the UK in comparison to no intervention [1]. The population under evaluation are patients at increased risk of death or other cardiovascular events from CVD (scenario 2). A cohort of patients enters the ScHARR model with a defined annual CHD risk and corresponding CVD risk which are dependent on both age and gender, from which the costs and health outcomes are estimated over the patients' lifetime.

An NHS perspective is applied in the analysis and all costs considered are direct costs to the NHS. Costs include treatment, inpatient procedures and outpatient procedures. Costs were discounted at 6.0%. The health outcomes were measured by the quality adjusted life year and discounted at a rate of 1.5%.

The incremental costs and QALYs were not separately reported for the primary prevention of CVD which restricted this analysis to only making a judgement on the likely feasibility of the cost effectiveness of the indicator at a given range of QOF points. For more details about the model structure and specific model inputs please refer to the HTA published report.

The upper and lower age range of this indicator is set at 30 – 74 years which allows for all of the agreed risk assessment tools to be applied (Framingham, JBS2, ASSIGN, QRISK). In this paper, data on both costs and health outcomes is available from patients aged 45 years and older. Therefore, the cost effectiveness of patients below the age of 45 years old will remain speculative.

Societal value of a QALY

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

Incremental cost-effectiveness ratio

The (discounted) incremental cost effective ratios (ICERs) presented in Table 1 and 2 suggest that prescribing statin therapy to patients at increased risk of CVD can be considered a cost-effective use of NHS resources before considering the QOF payments in the base case analysis (i.e. ICERs < Societal value of a QALY, ICERs < £25,000).

Figure 1: Incremental cost-effectiveness ratio

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

Table 1: The estimated cost per QALY (discounted) for primary prevention for the male population at various risk levels [1]

Annual risk					
CHD risk	3.0%	2.5%	2.0%	1.5%	1.0%
CVD risk < 54 years	3.8%	3.2%	2.6%	2.0%	1.3%
CVD risk > 54 years	4.3%	3.7%	3.0%	2.4%	1.8%
Men aged 45	£5,200	£5,500	£6,000	£6,800	£8,200
Men aged 55	£5,900	£6,400	£7,100	£8,100	£9,900

Men aged 65	£7,500	£8,300	£9,400	£11,200	£14,100
Men aged 75	£10,900	£12,300	£14,300	£17,400	£22,400

Table 2: The estimated cost per QALY (discounted) for primary prevention for the female population at various risk levels [1]

Annual risk					
CHD risk	3.0%	2.5%	2.0%	1.5%	1.0%
CVD risk < 54 years	4.0%	3.4%	2.7%	2.1%	1.5%
CVD risk > 54 years	4.7%	4.0%	3.3%	2.5%	1.8%
Women aged 45	£5,400	£5,600	£6,000	£6,800	£8,300
Women aged 55	£5,500	£5,800	£6,400	£7,400	£9,400
Women aged 65	£6,400	£7,000	£8,000	£9,600	£12,600
Women aged 75	£9,100	£10,200	£12,000	£14,700	£19,500

Eligible population

The raw prevalence of Cardiovascular Disease – Primary Prevention for England in 2009/10 was estimated to be 0.6% [3]. This was taken as the eligible population in the base case. During the pilot phase, the eligible population at 16 piloted practices was estimated to be 0.62% of the total practice population.

Baseline level of achievement

Pre-pilot the mean practice achievement recorded at 16 sites was estimated to be 38.76% and 55.81% at the post-pilot phase reported by 18 primary care sites. In the base case a baseline level of achievement of 38.76% is assumed. Caution is required in the interpretation of these reported baselines due to the coding difficulties facing the practices during the piloting phase for these indicators.

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 [4].

Table 3: 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 £130.51. This is the forecast value per point in England during 2011/12 (source; Information Centre).

Table 4: Value per point for all UK members (most recently available)

Country	Value per point
England	£130.51
Scotland	£127.29
Wales	£130.47
Northern Ireland	£122.00

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 were agreed by NICE, YHEC and the economic sub-group to justify the practice successfully completing the activity.

In the base case analysis, 7 points were allocated to the proposed CVD primary prevention indicator. Sensitivity analysis will be followed out between the agreed lower and upper bounds of 5 and 12 points (i.e. the range evaluated).

Thresholds

The minimum threshold is set to 40% and the incentivised payments increase linearly up to the maximum threshold of 90%.

Results and Discussion

Although indicative net benefit analysis could not be applied to include any potential QOF payments, the cost effectiveness evidence reviewed on statins therapy for patients at increased CVD risk suggests that the indicator is cost effective, and is likely to warrant QOF payments up to the upper bound of 12 points. This is largely a result of the low cost of therapy and the significant increase in health benefits that can be achieved.

Table 1 and 2 demonstrate the ICERs are lower at younger ages, this is due to people at younger ages have a greater period over which to accrue the benefits of statins. The ICERs are also lower in patients at higher risk of CVD as the risk of events is higher in these patients, so the capacity to avoid events through statin therapy is greater. Considering these two points and the eligibility of patients for the indicator, it is likely that treating patients with statin therapy who are at increased risk of CVD who are aged between 30 and 45 also represent a cost effective use of NHS resources even when taking in account QOF payments.

The HTA also estimated a weighted ICER for all ages and is presented in Tables 5 and 6 (from 45 years onwards) and supports the notion that the indicator would be highly cost effective across a wide range of points.

Table 5: The weighted estimated cost per QALY (discounted) for primary prevention for the male population at various risk levels [1]

Annual risk					
CHD risk	3.0%	2.5%	2.0%	1.5%	1.0%
CVD risk < 54 years	4.0%	3.4%	2.7%	2.1%	1.5%
CVD risk > 54 years	4.7%	4.0%	3.3%	2.5%	1.8%
Men	£8,900	£8,500	£9,500	£10,100	£10,800

Table 6: The weighted estimated cost per QALY (discounted) for primary prevention for the female population at various risk levels [1]

Annual risk					
CHD risk	3.0%	2.5%	2.0%	1.5%	1.0%
CVD risk < 54 years	4.0%	3.4%	2.7%	2.1%	1.5%
CVD risk > 54 years	4.7%	4.0%	3.3%	2.5%	1.8%
Women	£6,800	£7,200	£8,600	£9,500	£13,700

This analysis does not take the costs associated with identifying and screening the relevant population. Providing the population who benefit from this indicator is those at high risk of CVD, i.e. 20% 10 year CVD risk, it is likely this indicator should remain cost effective if these costs were considered within the analysis.

The ICERs in the HTA were higher when they explore the effect of providing statin therapy to patients at increased risk of CHD only and not other cardiovascular outcomes (including TIA and stroke) [1].

References

[1] Ward S, Lloyd Jones M, Pandor A, Holmes M, Ara R, Ryan A, Yeo W, Payne N (2007). A systematic review and economic evaluation of statins for the prevention of coronary events. Health Technology Assessment; 11(14).

[2] Lipid modification; Cardiovascular risk assessment and the modification of blood lipids for the primary and secondary prevention of cardiovascular disease. NICE clinical guideline 67. National Institute for Health and Clinical Excellence. Published; May 2008.

[3] Quality and Outcomes Framework Achievement Data 2009/10. The Information Centre.

[4] General Practice Trends in the UK. NHS Information Centre. Published; 22 March 2011

Appendix A: Background to cost-effectiveness evidence (QOF)

This appendix provides background information to the approach used for evaluating the economic implications of existing and potential new indicators for the QOF. The approach has been developed by economists at the Universities of York and East Anglia, and presented previously to the QOF Advisory Committee.

The approach to cost effectiveness considers two issues:

1. Is the activity/intervention described by the indicator cost effective?
2. What level of payment is economically justifiable to increase the activity?

The first question seeks to determine whether an activity or intervention will result in benefits which are greater than the costs of undertaking the activity. In this analysis, health benefits are assumed to be measured in Quality Adjusted Life Years (QALYs) which can be valued in monetary terms at £25,000 each. The net benefit calculation subtracts the delivery costs and the QOF payments from the monetarised health benefits

Net benefit = (monetised benefit – delivery cost) – QOF payment

The second question relates to the level of QOF payments which can be justified to increase levels of desired activities whilst retaining net benefits to the NHS. This is directly relevant to negotiations relating to the implementation of indicators and decisions on the number of QOF points to be allocated to a particular indicator. Where sufficient data are available, detailed sensitivity analysis on QOF points and uptake levels can be undertaken within the cost-effectiveness model. This paper provides information on the cost-effectiveness of the pilot indicators, to inform the decisions of the QOF Advisory Committee.

Nature of cost-effectiveness evidence

A couple of conditions must hold for an indicator to be deemed cost-effective:

1. The intervention/activity itself must be cost-effective. In the UK, NICE use an implicit threshold of £20,000 to £30,000 per QALY gained.
2. The intervention/activity must lead to an increase in the number of eligible patients receiving the intervention/activity.

The main challenge associated with cost-effectiveness analyses of the indicators is the availability of data on the costs and health benefits of implementing the targeted activities. The main source of this has been the review of NICE clinical guidelines and published literature. For several indicators there is the additional problem of linking them directly to changes in patient outcomes so that net health benefits can be assessed.

Many of the indicators relate to areas of clinical management which have been shown to be cost-effective if correctly carried out. However, the indicators themselves do not always measure the delivery of treatment; they frequently require the assessment and documentation of a patient's disease status, or whether they have had a particular diagnostic test. These types of indicators may lead to changes

in treatment and improvement in patient outcomes, but it is not certain to happen. In reviewing the piloted indicators we have applied a three-way classification:

i. Indicators which relate directly to a change in treatment;

ii. Indicators which change the availability of information available to the treating clinician in a disease where there is a proven therapy;

iii. Indicators which change the availability of information but which do not directly inform a treatment decision.

Indicators in category (i) are most amenable to cost-effectiveness analysis as they can lead directly to a change in outcome. Those in category (ii) may also lead to a change in outcomes if the new information is acted upon. To carry out the cost-effectiveness an assumption must be made on the likelihood of such a change in management taking place. The third category is least amenable to cost-effectiveness analysis as improvement in the process of information collection is unlikely to change the patient outcome.

The main challenge associated with the analyses outlined above, is the availability of evidence on the costs and health benefits of existing and new clinical indicators. Two economic approaches have been derived:

Approach one – Net benefit analysis

A net benefit approach has been recommended as the most appropriate means of evaluating whether an indicator can be considered cost effective. Cost effectiveness is intended to consider whether the costs associated with an indicator are outweighed by the benefits accrued by the health service. When a robust evidence base is available for an indicator, they can be identified as a category (i) indicator. When an indicative evidence base is available for category (ii) indicators it is possible to apply the net benefit approach.

Approach two – Threshold analysis

Threshold analysis has been identified as the approach when considering indicators with a thin evidence base, i.e. missing data. For example, where the costs of delivering an indicator are known or can be easily estimated, but the effectiveness is unknown, then it is possible to identify the minimum level of effectiveness necessary for an indicator to be considered cost effective, in terms of quality-adjusted life years (QALYs) per patient per annum. This can also be expressed in terms of a minimum cost-saving (£) per patient per annum. This approach is applied to the category (ii) indicators with a thin evidence base.

Data on costs of implementation can be estimated from descriptions of the actions required to meet the potential indicator targets. The nature and extent of any QOF payment is unknown at this stage. Judgement can be made on the potential cost-effectiveness of an indicator if the difference between the costs and benefits of implementation is known. If this is relatively small, then there will be little scope for incentive payments if positive net benefits are to be achieved.

Piloted indicators are reviewed to determine which are associated with a therapeutic benefit that can be measured in QALY terms. Indicators which do not have a direct link to therapeutic benefit (process indicators) are subject to a preliminary economic

appraisal. The danger of attributing a therapeutic benefit to a process indicator is that the necessary assumptions may be seen, in some cases, as tenuous.

Although the cost-effectiveness of indicators that do not have a direct link to therapeutic benefit may be unclear, this does not mean that they are poor value for money, but rather that new studies are required to produce the data needed to determine their cost-effectiveness (Walker *et al*. 2010).

References

Walker S, Mason AR, Claxton K, Cookson R et al. (2010) Value for money and the Quality and Outcomes Framework in primary care in the UK NHS. British Journal of General Practice; May 2010, e213-220.