UNIVERSITY OF BIRMINGHAM AND YORK HEALTH ECONOMICS CONSORTIUM

(National Collaborating Centre for Indicator Development)

Health economic report on piloted indicators

Pilot QOF indicator: Atrial Fibrillation (AF)

The percentage of patients with atrial fibrillation, currently treated with an anticoagulant, who have had a review in the preceding 12 months which included:
a) Assessment of stroke/VTE risk
b) Assessment of bleeding risk c) Assessment of renal function, creatinine clearance, FBC and LFTs.
d) Any adverse events related to anticoagulation
e) Assessment of compliance
f) Choice of anticoagulant

Potential output: Recommendations for NICE Menu

Contents

Introduction and economic rationale for the indicator

This briefing paper presents economic analysis of the following potential indicator from pilot 11 of the NICE Quality and Outcomes Framework (QOF) indicator development programme:

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d) Any adverse events related to anticoagulation
e) Assessment of compliance
f) Choice of anticoagulant

The economic analysis is based on evidence of delivery costs and evidence of benefits expressed as quality-adjusted life years (QALYs). The delivery cost 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 Indicator 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 cost-effective use of NHS resources and whether the potential QOF points provide an incentive to deliver the indicator.

Stroke/VTE risk, anticoagulation and review

The NICE Guideline for Atrial Fibrillation (CG180) recommends that patients on anticoagulation therapy should receive an annual review covering the six areas in the proposed indicator [1]. The Guideline Committee found no economic evidence to support an annual review of the type proposed, but an economic model was developed for the Guideline to assess the choice of anticoagulant based upon stroke and bleed risk. The findings from this model were used to recommend that atrial fibrillation (AF) patients with a CHA_2DS_2VASc score of 2 or greater, or men with a score of 1 or greater (which would be all men with AF over the age of 75), should be offered anti-coagulation therapy taking bleeding risk into account. The findings from the model have been used and modified to explore the cost effectiveness of the annual review proposed in the Guideline and incentivised by this indicator.

Summary of assumptions:

- The costs of the indicator arise from a GP consultation and blood tests administered by a practice nurse or phlebotomist.
- To take a conservative approach, there are no cost savings included in the assessment, although these will arise from a reduction in venous thromboembolism(VTE)/stroke events over time.
- QALY gains arise from the review improving compliance with anticoagulation therapies in AF patients who were poorly compliant.

Assumptions on delivery cost of the indicator

The economic model developed for CG180 was constructed on the basis that patients prescribed with anti-coagulation therapy would receive a review when an event significantly altered their stroke/VTE or bleeding risk, such as reaching a specific age or a diagnosis of diabetes [1]. The lifetime costs of all anti-coagulant therapies and relevant healthcare costs associated with stroke/VTE were included in the model, as well as the costs of reviews when they were required. Anticoagulation therapy was found to be cost effective for specific risk groups in the model, so it was assumed that the lifetime costs for patients receiving an annual review who are already prescribed anticoagulation therapy are accounted for in terms of cost effectiveness in the model. On that basis, only the costs of the additional annual review (not included in the economic model) were taken into account in the assessment for the indicator.

The cost of the annual review was assumed to be equivalent of a GP consultation that lasts 17.2 minutes at a cost of £67 [2] plus the cost of the four blood tests required for the indicator. These were estimated at £6 per test with an assumption that renal function and creatinine would be undertaken at the same time [3]. The blood was assumed to be taken by a GP nurse for 15 mins at a cost of £10.75 [2]. These costs may be higher than expected but allow for a conservative approach. Scenario analysis was, therefore, used to assess the impact of the cost being 50% lower than the base case.

As any cost savings arising from reductions in VTE/stroke events as a result of the annual review were not included for the indicator. The cost of delivery can, therefore, be seen as pessimistic ensuring that the cost-effectiveness results are conservative.

Baseline costs:

- The baseline cost of delivering the intervention were estimated to be £95.75 per patient (£67+(3x£6)+£10.75).
- These costs cover the cost of the annual review in GP and nurse time, and the cost of blood tests.

Assumptions on the benefits of the indicator

The benefits of the indicator focused on QALY gains derived from the NICE economic model developed for the AF guideline. The model was constructed to estimate the cost-effectiveness of anticoagulation therapy compared to doing nothing, or providing anti-platelet or dual anti-platelet therapies, based upon the stroke and bleeding risk of patients [1]. The benefits of the indicator were, therefore, based upon a patient having optimal VTE/stroke risk reduction therapy following review, assuming that compliance with therapy had been insufficient before the review. The guideline recommends that VTE/stroke reduction therapies should only be considered if an AF patient had a CHA_2DS_2VASc score of 2 or greater or were men with a score of 1 or greater.

To calculate the potential QALY gain from the indicator, an estimate was made of the potential QALY gain associated with moving onto effective VTE/stroke reduction therapy for the number of AF patients who were inadequately compliant with their therapies prior to review.

The QALY results from the economic model are not easy to interpret, but suggest that for AF patients with CHA_2DS_2VASc score of 2 or greater the QALY gain from anticoagulation therapy compared to doing nothing ranged from 0.005 to 0.040 depending on bleed risk. For men with a score of 1 or greater QALY gains ranged from 0.004 to 0.006. For simplicity it was assumed that 'doing nothing' is equivalent to being inadequately compliant with therapy. At baseline it was assumed that 50% of patients inadequately compliant would be men with a score of 1 or greater and the remaining 50% would be AF patients with a CHA_2DS_2VASc score of 2 or greater. The mid-points of the range of QALY gains for both groups was taken, giving a baseline QALY gain per patient moving onto adequate anticoagulation of 0.01375: ((0.040+0.005)/2)+((0.004+0.006)/2)/2. The range from 0.004 to 0.040 per patient was explored in sensitivity analysis.

The percentage of patients that would be found at review to be inadequately compliant with anticoagulation therapy could not be determined. Evidence for elderly patients suggests that 40-50% of elderly patients never start anticoagulation therapy that is prescribed to them and up to 50% are non-compliant at three years after therapy initiation [5]. It was, therefore, assumed as the base case that 50% of all AF patients on anticoagulation therapy would be found to be insufficiently compliant following a review, with sensitivity analysis exploring a range of 25% to 75%.

Baseline benefits:

- The baseline benefit of an annual review was 0.0069 QALYs (0.01375/2).
- These benefits were based upon an assumed QALY benefit of 0.01375 for patients who take anticoagulation therapy adequately. It was assumed that 50% of AF patients who become compliant with anticoagulation therapy following review were previously non-compliant.

Assumptions on the eligible population

The eligible population for this indicator was taken from the eligible population summing across the pilot 11 practices. This provided the estimate of the eligible population used in the base case analysis for the indicator. This was that, of the patients with AF, the percentage currently treated with an anticoagulant was 1.20%.

Baseline level of achievement

The baseline level of achievement was taken from the average baseline achievement from across the pilot 11 practices. This showed that, for the patients with AF who are currently treated with an anticoagulant, the percentage who had an annual review of their anticoagulation therapy was 0.39%.

Population

In the base case, the economic analysis was based on the total practice population registered with practices in England, that is, 7,674 practices with an average practice size of 7,450 [4].

Table 1: Practice information for UK countries, 2015

Country	Number of practices	Average list size
England	7,674	7,450
Scotland	981	5,736
Wales	454	7,021
Northern Ireland	349	5,582

QOF Payments

Each QOF point is assumed to result in a payment of £171.20. This is the value per point in England during 2017/18 (source: NHS Employers).

Value of a QALY

The expected QALY gain from implementing these indicators 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. So for a QALY gain of 0.0069 the value is £138 (0.0069 x £20,000)

QOF Points

The economic analysis considers the cost-effectiveness of the proposed activity over a range of QOF points. In the base case analysis for this indicator, analysis was carried out using 6 points as a baseline. This was based on similar current QOF indicators, such as **AF006: Patients with AF whose stroke risk has been assessed using the CHA_2DS_2VASc score system** which is worth 12 points. The subgroup felt that 6 points was more appropriate in this case as a baseline because the additional tests would not take significant time or resource.

Thresholds

Given the low rate of baseline achievement a threshold range of 40% to 80% was used for all the indicators.

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

Under the baseline assumptions of delivery cost (£95.75), benefit (0.0069 QALYs with a value of £20,000 per QALY) and eligible population (1.20%), then assuming all practices achieved the maximum threshold of 80% the total QOF payments with 6 points for the indicator would be £7.9 million with a net benefit of £10.8 million. Under these assumptions, the indicator is therefore highly cost effective, with QOF payments at the base case of 6 points justifiable on economic grounds.

At 6 points the QOF payment represents an incentive payment for the indicator of £11.49 per patient with AF being prescribed anticoagulation therapy. The indicator remains justifiable on economic grounds provided the incentive payment is lower than £27.27 per patient with AF and on anticoagulation therapy.

As the indicator is cost effective at the base case delivery cost and QALY gain, the cost-effectiveness only increased in the scenario analysis if a 50% lower delivery cost or maximum QALY gain of 0.04 was applied. If the lower estimated QALY gain considered in the sensitivity analysis was used (0.004) the indicator would not be cost effective at £20,000 per QALY, showing a net cost of £39.7 million for 6 points and 80% achievement.

The indicator continues to be cost effective at the base case at 80% achievement up to 14 points, or at the base case of 6 points if:

- Lifetime costs per patient are increased 20.7% to £115.57 – well above the 25% increase assumed in the scenario analysis.
- The QALY gain per patient is reduced by 317.5% to 0.006.
- The percentage of patients who were not compliant with medication and became compliant is 45.1% - well above the 25% lower bound considered in scenario analysis.

Discussion

The economic results are sensitive to the costs of the indicator although in the base case it is noted that they were already at the upper bounds of what could be considered reasonable. The results are also sensitive to the percentage of patients who are non-compliant with anti-coagulation therapy and become compliant after review. If the non-compliance to compliance rate falls below 45.1% then the indicator would no longer be cost-effective. Whilst there is evidence for high non-compliance rates in older people with AF, it is not clear that this is also the case for younger patients. We were unable to determine the effectiveness of review in improving compliance

Nevertheless, under the conservative baseline assumptions in this analysis there is economic evidence to offer the 6 points suggested for this indicator.

References

[1] National Institute for Health and Clinical Excellence. Atrial Fibrillation: The management of atrial fibrillation, 2014. Available from: https://www.nice.org.uk/guidance/cg180

[2] PSSRU. Unit Costs of Health and Social Care. 2016

[3] National Institute for Health and Clinical Excellence. Chronic kidney disease: early identification and management of chronic kidney disease in adults in primary and secondary care, 2014. Available from: https://www.nice.org.uk/guidance/cg182

[4] General practice trends in the UK. NHS Information Centre. Published 31 July 2016

[5] Garkina SV, Vavilova TV, Lebedev DS, Mikhaylov EN. Compliance and adherence to oral anticoagulation therapy in elderly patients with atrial fibrillation in the era of direct oral anticoagulants. Journal of Geriatric Cardiology : JGC. 2016;13(9):807-810. doi:10.11909/j.issn.1671-5411.2016.09.010.