

Putting NICE guidance into practice

# **Costing Report: atrial fibrillation**

**Implementing the NICE guideline on  
atrial fibrillation (CG180)**

Published: June 2014

This costing report accompanies the clinical guideline: 'Atrial fibrillation: the management of atrial fibrillation' (available online at <http://guidance.nice.org.uk/CG180>).

**Issue date:** June 2014

### **This report is written in the following context**

This report represents the view of NICE, which was arrived at after careful consideration of the available data and through consulting with healthcare professionals. It should be read in conjunction with the NICE guideline. The report and template are implementation tools and focus on the recommendations that were considered to have a significant impact on national resource utilisation.

The cost and activity assessments in the report are estimates based on a number of assumptions. They provide an indication of the likely impact and are not absolute figures. Assumptions used in the report are based on assessment of the national average. Local practice may be different from this, and the template can be amended to reflect local practice.

Implementation of the guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this costing tool should be interpreted in a way that would be inconsistent with compliance with those duties.

### **National Institute for Health and Care Excellence**

Level 1A  
City Tower  
Piccadilly Plaza  
Manchester M1 4BT

[www.nice.org.uk](http://www.nice.org.uk)

© National Institute for Health and Care Excellence, 2014. All rights reserved. This material may be freely reproduced for educational and not-for-profit purposes. No reproduction by or for commercial organisations, or for commercial purposes, is allowed without the express written permission of NICE.

## Contents

Executive summary.....	5
<i>Significant resource-impact recommendations</i> .....	5
<i>Net resource impact</i> .....	6
Costs	6
<i>Benefits</i> .....	7
<i>Local costing template</i> .....	8
1 Introduction.....	9
1.1 <i>Supporting implementation</i> .....	9
1.2 <i>What is the aim of this report?</i> .....	9
1.3 <i>Epidemiology of atrial fibrillation</i> .....	9
1.4 <i>Current service provision</i> .....	10
2 Costing methodology.....	11
2.1 <i>Process</i> .....	11
2.2 <i>Scope of the cost-impact analysis</i> .....	11
2.3 <i>General baseline assumptions made</i> .....	12
3 Significant resource-impact recommendations.....	14
3.1 <i>Do not offer aspirin monotherapy solely for stroke prevention to people with atrial fibrillation.</i> .....	14
3.2 <i>Use the CHA<sub>2</sub>DS<sub>2</sub>-VASc stroke risk score to assess stroke risk in patients with atrial fibrillation</i> .....	16
3.3 <i>Refer people promptly at any stage if treatment fails to control the symptoms of atrial fibrillation and referral for more specialised management is needed.</i> .....	17
3.4 <i>Benefits and savings</i> .....	18
3.5 <i>Net costs of significant resource impact recommendations</i> .....	18
3.6 <i>Other considerations</i> .....	19
4 Sensitivity analysis.....	19
4.1 <i>Methodology</i> .....	19
4.2 <i>Impact of sensitivity analysis on costs</i> .....	20
5 Impact of guidance for commissioners.....	20
6 Conclusion.....	21
6.1 <i>Total cost per 100,000 population</i> .....	21

6.2	<i>Next steps</i> .....	22
Appendix A.	Approach to costing guidelines .....	23
Appendix B.	Results of sensitivity analysis .....	24
Appendix C.	References .....	25

## Executive summary

This costing report looks at the resource impact of implementing the NICE guideline 'Atrial fibrillation: the management of atrial fibrillation' in England.

The costing method adopted is outlined in appendix A; it uses the most accurate data available, was produced in conjunction with key clinicians, and reviewed by clinical and financial professionals.

The commissioners for this topic are NHS England and Clinical Commissioning Groups. Services will be provided by primary, community and secondary care providers.

### ***Significant<sup>1</sup> resource-impact recommendations***

This report focuses on the recommendations that are considered to have the greatest resource impact nationally, and therefore require the most additional resources to implement or can potentially generate the biggest savings. They are:

- 1.5.15 Do not offer aspirin monotherapy solely for stroke prevention to people with atrial fibrillation.
- 1.4.1 Use the [CHA<sub>2</sub>DS<sub>2</sub>-VASc](#) stroke risk score to assess stroke risk in people with any of the following:
  - symptomatic or asymptomatic paroxysmal, persistent or permanent atrial fibrillation
  - atrial flutter
  - a continuing risk of arrhythmia recurrence after cardioversion back to sinus rhythm.

---

<sup>1</sup>The following impacts have been defined as significant:

- where the number of people affected by the guidance recommendations is estimated to be over 300 (equivalent to 1 patient per 170,000; in practice, smaller populations may have no patients or possibly more than one, particularly if it is a disease that runs in families and there is a cluster in one area)
- where initial costing work indicates that the national cost is more than £1 million (equivalent to £2000 per 100,000 population).

- 1.3.1 Refer people promptly<sup>2</sup> at any stage if treatment fails to control the symptoms of atrial fibrillation and referral for more specialised management is needed.

### ***Net resource impact***

The annual change in resource use per 100,000 of population arising from implementing the recommendations to not offer aspirin to prevent strokes in people with atrial fibrillation and use CHA<sub>2</sub>DS<sub>2</sub>-VASc for stroke risk assessment is summarised in the table below. Non-recurrent costs will need to be determined locally.

<b>Current/future costs</b>	<b>Type of costs</b>	<b>Annual recurrent costs £000s</b>
Current costs (before following guideline recommendations)	Cost of drugs	347
	Cost of adverse events (strokes)	733
<b>Total current costs</b>		<b>1,080</b>
Future costs (after following guideline recommendations)	Cost of drugs	654
	Cost of adverse events (strokes)	513
<b>Total future costs</b>		<b>1,168</b>
<b>Net cost</b>		<b>88</b>

### **Costs**

There will be significant costs from implementing the recommendation to not treat patients with atrial fibrillation with aspirin to reduce risk of stroke, as alternative treatments are significantly more expensive.

The alternative treatments listed in the guideline are assumed to reduce future adverse events.

<sup>2</sup>The Guideline Development Group defined 'promptly' as no longer than 4 weeks after the final failed treatment or no longer than 4 weeks after recurrence of atrial fibrillation following cardioversion.

The costing template that accompanies this report estimates the costs of implementing this guidance. The commissioners for atrial fibrillation are predominantly Clinical Commissioning Groups, NHS England commission GP services and some specialist non-drug treatments for atrial fibrillation. Commissioners and providers (primary, community and secondary care providers) may wish to assess the local impact of this guideline using the template.

It has been assumed that the change in practice will occur in the first year, as the clinical effectiveness evidence for change is substantial and the change may be incentivised locally.

The method of stroke assessment has been changed from previous guidance; this may increase the number of people eligible for anticoagulation treatment. There may be a reduction in adverse events as a result of increased numbers of people receiving anticoagulation treatment.

Expert opinion estimates that there may be a cost impact from the recommendation to refer patients promptly at any stage if treatment fails to control the symptoms of atrial fibrillation. Expert opinion indicates that there is significant variation in current local provision. This means it is not possible to quantify with a reasonable degree of certainty what impact this recommendation will have on resources. It is anticipated that the impact of this recommendation will be in areas where people are not currently referred promptly. There will be a non-recurrent cost as people with atrial fibrillation move through the system more promptly.

## ***Benefits***

Implementing the clinical guideline may result in the following benefits:

- risk of stroke for people with atrial fibrillation will reduce to 69% of current level
- approximately 10,000 fewer strokes per year in people with atrial fibrillation
- people with atrial fibrillation being able to better manage their condition.

### ***Local costing template***

The costing template produced to support this guideline enables organisations in England, Wales and Northern Ireland to estimate the impact locally and replace variables with ones that depict the current local position. A sample calculation using this template showed that additional costs of £88,000 could be incurred for a population of 100,000.



# 1 Introduction

## 1.1 *Supporting implementation*

1.1.1 The NICE clinical guideline on atrial fibrillation is supported by the following implementation tools available on our website

[www.nice.org.uk/guidance/CG180](http://www.nice.org.uk/guidance/CG180):

- costing tools
  - a costing report; this document
  - a local costing template; a spreadsheet that can be used to estimate the local cost of implementation
- shared learning case studies.

## 1.2 *What is the aim of this report?*

1.2.1 This report provides estimates of the cost impact arising from implementation of guidance on atrial fibrillation in England. These estimates are based on assumptions made about current practice and predictions of how current practice might change following implementation.

1.2.2 This report aims to help NHS England, clinical commissioning groups, and providers in primary, community and secondary care, plan for the financial implications of implementing NICE guidance.

1.2.3 This report does not reproduce the NICE guideline on atrial fibrillation and should be read in conjunction with it (see [www.nice.org.uk/guidance/CG180](http://www.nice.org.uk/guidance/CG180)).

1.2.4 The costing template that accompanies this report is designed to help those assessing the resource impact at a national and local level in England, Wales or Northern Ireland.

## 1.3 *Epidemiology of atrial fibrillation*

1.3.1 Atrial fibrillation is the most common sustained cardiac arrhythmia; it affects about 1.6% of the population in England and Wales. This

is probably an underestimate as atrial fibrillation is difficult to diagnose in the early stages. Men are more commonly affected than women at a ratio of almost 2 to 1. The prevalence of atrial fibrillation increases with age. This may lead to increased prevalence of atrial fibrillation as there is an aging population in England.

- 1.3.2 The percentage of population being prescribed anticoagulation treatment for atrial fibrillation is based on the uptake of treatment from the GRASP-AF database, and the prescribing levels from the IMS Disease analyser. The prescription levels for the newer oral anticoagulants are estimated across the 3 treatments (dabigatran etexilate, rivaroxaban and apixaban).

**Table 1 Current prescribing of anticoagulation treatments for atrial fibrillation in England<sup>3</sup>**

Treatment	Percentage of population	Number of people (000s)
Warfarin	34.32%	305
Aspirin	22.49%	200
Dabigatran etexilate	4.73%	42
Rivaroxaban	4.73%	42
Apixaban	4.73%	42
No treatment	28.99%	258

## **1.4 Current service provision**

- 1.4.1 The aim of treatment for atrial fibrillation is to prevent complications, in particular stroke, and to alleviate symptoms. Diagnosis of atrial fibrillation is confirmed by electrocardiogram (ECG).
- 1.4.2 Drug treatments for atrial fibrillation include anticoagulants to reduce the risk of stroke (this includes newer oral anticoagulants such as apixaban), and antiarrhythmics to restore or maintain the normal heart rhythm or to slow the heart rate in patients who

<sup>3</sup>IMS Disease Analyzer 2012/13 and GRASP-AF database download, April 2014.

remain in atrial fibrillation. The current uptake of anticoagulation treatments is highlighted in table 1.

- 1.4.3 Non-drug treatments include electrical cardioversion to shock the heart back to its normal rhythm and catheter or surgical ablation to create lesions to stop the abnormal electrical impulses that cause atrial fibrillation. It has been assumed that for the purpose of this report there is not a significant change in costs relating to non-drug treatments.

## **2 Costing methodology**

### **2.1 *Process***

- 2.1.1 We use a structured approach for costing clinical guidelines (see appendix A).
- 2.1.2 We have to make assumptions in the costing model. These are tested for reasonableness with members of the Guideline Development Group (GDG) and key clinical practitioners in the NHS.
- 2.1.3 Local users can assess local cost impact, using the costing template as a starting point, and update assumptions to reflect local circumstances.

### **2.2 *Scope of the cost-impact analysis***

- 2.2.1 The guideline offers best practice advice on atrial fibrillation.
- 2.2.2 The guideline does not apply to people with congenital heart disease causing atrial fibrillation. Therefore, these issues are outside the scope of the costing work.
- 2.2.3 We worked with the GDG and other professionals to identify the recommendations that would have the most significant resource-impact (see table 2). Costing work has focused on these recommendations.

**Table 2 Recommendations with a significant resource impact**

<b>Recommendation</b>	<b>Recommendation number</b>	<b>Guideline key priority?</b>
Do not offer aspirin monotherapy solely for stroke prevention to people with atrial fibrillation.	1.5.15	✓
Use the CHA <sub>2</sub> DS <sub>2</sub> -VASc stroke risk score to assess stroke risk in people with any of the following: <ul style="list-style-type: none"> <li>• symptomatic or asymptomatic paroxysmal, persistent or permanent atrial fibrillation</li> <li>• atrial flutter</li> <li>• a continuing risk of arrhythmia recurrence after cardioversion back to sinus rhythm.</li> </ul>	1.4.1	✓
Refer people promptly at any stage if treatment fails to control the symptoms of atrial fibrillation and referral for more specialised management is needed.	1.3.1	✓

2.2.4 Five of the recommendations in the guideline have been identified as key priorities for implementation, and 3 of these 5 are also the 3 recommendations considered to have significant resource impact.

2.2.5 We have limited the consideration of costs and savings to direct costs to the NHS that will arise from implementation. We have not included consequences for the individual, the private sector or the not-for-profit sector. If applicable, any realisable cost savings arising from a change in practice have been offset against the cost of implementing the change. The recommendations that are not anticipated to have a significant cost impact have not been considered when evaluating the cost of implementing this guideline.

### **2.3 *General baseline assumptions made***

2.3.1 The model is based on population estimates (see table 3).

**Table 3 Atrial fibrillation baseline population assumptions per 100,000**

<b>Description</b>	<b>NICE assumptions percentage changes</b>	<b>Number of people affected per 100,000 population</b>
Prevalence of atrial fibrillation	1.60% <sup>4</sup>	1,600
Prevalence of patients under current guidance with moderate or high stroke / thromboembolic risk, CHADS2 score >=2	57.81%	925
Prevalence of patients under future practice with moderate or high stroke / thromboembolic risk, CHA2DS2-VASc score >=2	84.21%	1,347
Current practice of using a mix of CHADS2 and CHA2DS2VASc to assess stroke and thromboembolic risk in the ratio 50:50	71.01%	1,136
People receiving treatment with warfarin	34.32% <sup>5</sup>	549
People receiving treatment with aspirin	22.49% <sup>5</sup>	360
People receiving treatment with dabigatran etexilate	4.73% <sup>56</sup>	76
People receiving treatment with rivaroxaban	4.73% <sup>56</sup>	76
People receiving treatment with apixaban	4.73% <sup>56</sup>	76
People receiving no treatment	28.99% <sup>5</sup>	464

2.3.2 Table 3 identifies the prevalence of atrial fibrillation per 100,000 population, around 1,600. The effects of the change in stroke risk scoring for this population will be an increase of around 200 people being offered anticoagulation treatment.

<sup>4</sup>Population with atrial fibrillation from NICE technology appraisal 249 (Dabigatran for atrial fibrillation).

<sup>5</sup>IMS Disease Analyzer 2012/13.

<sup>6</sup> The prescription levels for the newer oral anticoagulants are estimated across the 3 treatments (dabigatran etexilate, rivaroxaban and apixaban)

### **3 Significant resource-impact recommendations**

#### **3.1 *Do not offer aspirin monotherapy solely for stroke prevention to people with atrial fibrillation.***

##### **Background**

- 3.1.1 Aspirin is currently offered as an option to reduce the risk of stroke in people with atrial fibrillation. Around 22% of people with atrial fibrillation received aspirin in 2012/13. This equates to around 200,000 people in England or 360 people per 100,000 population.
- 3.1.2 The GDG considered the risks from taking aspirin to be greater than the benefit from the level of reduced stroke risk.
- 3.1.3 It is likely that the number of people being treated with aspirin could be higher than suggested in the template because of the low cost and wide availability of aspirin. If people are currently taking aspirin that has been bought over the counter, the cost of replacement anticoagulation drugs are likely to be greater than in the costing template.

##### **Assumptions made**

- 3.1.4 The current usage of drug treatments is based on the IMS Disease Analyzer<sup>7</sup> for people with atrial fibrillation in 2012/13 (see table 3).
- 3.1.5 The unit cost for each treatment is the cost of the drug<sup>8</sup>, except for warfarin when it also includes the cost of anticoagulation clinics. All other costs such as regular cardiology reviews are considered to be the same for all treatments. All costs in this report and the accompanying template are annual costs. The calculations for these unit costs can be found in the costing template.

---

<sup>7</sup> IMS Disease Analyzer 2012/13

<sup>8</sup> [BNFwebsite accessed on 01/05/2014](#)

**Table 4 Annual cost of treatments for atrial fibrillation**

<b>Treatment</b>	<b>Annual cost of treatment £</b>
Warfarin (including monitoring)	283
Aspirin	32
Dabigatran etexilate	802
Rivaroxaban	767
Apixaban	802

3.1.6 It has been assumed that 2.5% of people will continue treatment with aspirin despite the recommendation not to treat with aspirin. These people are likely to have other indications as well as atrial fibrillation and will continue on aspirin as a result. All other people are assumed to change to another treatment and they will move in equal numbers to be treated with warfarin, apixaban, rivaroxaban and dabigatran etexilate. The effect on treatment usage as a result of this recommendation is shown in table 5.

**Table 5 Future treatments**

<b>Treatment</b>	<b>Current usage</b>	<b>Future usage</b>
Warfarin	34.32%	46.74%
Aspirin	22.49%	2.50%
Dabigatran etexilate	4.73%	11.65%
Rivaroxaban	4.73%	11.65%
Apixaban	4.73%	11.65%
No treatment	28.99%	15.79%

3.1.7 It estimated this change in treatment will reduce the number of strokes, as shown in table 6 below. It is estimated that this will

reduce costs of stroke treatment by £224,000 per population of 100,000.

**Table 6 Estimated number of strokes per 100,000 in people with atrial fibrillation**

<b>Treatment mix</b>	<b>Estimated number of strokes in people with atrial fibrillation</b>
Current treatment mix	59
Future treatment mix	41

### **Cost summary**

3.1.8 The increase in drug costs resulting from this recommendation will be partly offset by a reduction in the cost of treating strokes related to atrial fibrillation. A summary of the net cost of implementing this guideline can be seen in table 7.

### **Other considerations**

3.1.9 Some patient groups may struggle to cope with the rigours of the monitoring regime needed to support warfarin. Clinical experts on the GDG suggested that this group of people may previously have been treated with aspirin. It has been assumed that these people would be able to cope with treatment using one of the newer oral anticoagulants available instead. The effect of a smaller group of people transferring to warfarin has been tested in the sensitivity analysis.

## **3.2 Use the *CHA<sub>2</sub>DS<sub>2</sub>-VASc* stroke risk score to assess stroke risk in patients with atrial fibrillation**

### **Background**

3.2.1 The previous guideline recommended people with a score of 2 or more using the CHADS<sub>2</sub> stroke risk score to be offered anticoagulation treatment. Changing the stroke risk assessment tool to the CHA<sub>2</sub>DS<sub>2</sub>-VASc increases the percentage of people who



would be offered anticoagulation treatment, from 57.81% under CHADS<sub>2</sub> to 84.21% under CHA<sub>2</sub>DS<sub>2</sub>-VASc.

- 3.2.2 Expert opinion indicates that some services already use the CHA<sub>2</sub>DS<sub>2</sub>-VASc score to assess stroke risk. To take this into account the current practice in the template assumes 50% of people are assessed using CHADS<sub>2</sub> and 50% using CHA<sub>2</sub>DS<sub>2</sub>-VASc. This assumes that 71.01% of people would be offered anticoagulation treatment under current practice.
- 3.2.3 Because of the change in anticoagulation treatments it is estimated that there may be a small increase in major bleeds of 3 per 100,000 people. This is estimated to be an increased cost of £4,000 per 100,000 people.

### **Cost summary**

- 3.2.4 Drug costs will increase as a result of the greater number of people being offered anticoagulation treatment. This will be partly offset by fewer people with atrial fibrillation having strokes and a reduction in the associated cost of treatment. A summary of the net cost of implementing this guideline can be seen in table 7.

### **3.3 *Refer people promptly at any stage if treatment fails to control the symptoms of atrial fibrillation and referral for more specialised management is needed.***

### **Background**

- 3.3.1 Currently there is significant variation between services in the time taken to refer people to another stage of treatment. The GDG concluded people were often not progressing to the next stage of treatment promptly enough.
- 3.3.2 The GDG defined 'promptly' as no longer than 4 weeks after the final failed treatment or no longer than 4 weeks after recurrence of atrial fibrillation following cardioversion.

## **Cost summary**

- 3.3.3 There is likely to be a non-recurrent cost of moving people through the stages of treatment more promptly. The group of people being treated will not change because of this recommendation. Therefore it is unlikely that there will be a recurrent cost impact when referral times have stabilised.
- 3.3.4 There is currently considerable variation in referral times between services. Commissioners and providers may wish to assess the impact of this recommendation locally.

## **3.4 *Benefits and savings***

- 3.4.1 People with atrial fibrillation should have lower stroke risk as a result of following the recommendations in the guideline. This will reduce the number of people having strokes and therefore be a saving to clinical commissioning groups; secondary care providers may be able to reallocate resources to other priority services. Clinical commissioning groups and acute hospitals should work together to ensure effective use of resources.

## **3.5 *Net costs of significant resource impact recommendations***

- 3.5.1 The cost per 100,000 of population of implementing the recommendations to not offer aspirin and to assess stroke risk using CHA<sub>2</sub>DS<sub>2</sub>-VASc is estimated in table 7.

**Table 7 Cost impact per 100,000 of the recommendations not to offer aspirin monotherapy to reduce stroke risk and to use the CHA<sub>2</sub>DS<sub>2</sub>-VASc stroke risk assessment**

<b>Treatments and adverse events</b>	<b>People</b>	<b>Unit costs (£s)</b>	<b>Cost (£s)</b>
Warfarin	549	283	155,000
Aspirin	360	32	12,000
Dabigatran etexilate	76	802	61,000
Rivaroxaban	76	767	58,000
Apixaban	76	802	61,000
No treatment	464	0	0
Strokes	59	12,228	719,000
Major bleeds	12	1,173	14,000
<b>Treatment including aspirin</b>			<b>1,080,000</b>
Warfarin	748	283	212,000
Aspirin	40	32	1,000
Dabigatran etexilate	186	802	150,000
Rivaroxaban	186	767	143,000
Apixaban	186	802	150,000
No treatment	253	0	0
Strokes	41	12,228	495,000
Major bleeds	15	1,173	18,000
<b>Treatment without aspirin</b>			<b>1,168,000</b>
<b>Net cost/saving (-)</b>			<b>88,000</b>

### **3.6 Other considerations**

3.6.1 People with atrial fibrillation are to be offered personalised packages of care including comprehensive education and information. This should be in line with the recommendations in [Patient experience in adult NHS services](#) (NICE clinical guideline 138).

## **4 Sensitivity analysis**

### **4.1 Methodology**

4.1.1 There are a number of assumptions in the model for which no empirical evidence exists; these are therefore subject to a degree of uncertainty.

- 4.1.2 Appropriate minimum and maximum values of variables were used in the sensitivity analysis to assess which variables have the biggest impact on the net cost or saving. This enables users to identify the significant cost drivers.
- 4.1.3 It is not possible to arrive at an overall range for total cost because the minimum or maximum of individual lines are unlikely to occur simultaneously. We undertook one-way simple sensitivity analysis, altering each variable independently to identify those that have greatest impact on the calculated total cost.
- 4.1.4 Appendix B contains a table detailing all variables modified, and the key conclusions drawn are discussed below.

## **4.2 *Impact of sensitivity analysis on costs***

### **Prevalence of atrial fibrillation**

- 4.2.1 The prevalence of atrial fibrillation is not fully known because of the difficulty of diagnosis in the early stages. The cost of implementing this guidance is sensitive to the prevalence of atrial fibrillation.

### **People being treated with warfarin in future practice**

- 4.2.2 It has been estimated that people no longer continuing with aspirin to reduce stroke risk will move equally to warfarin, apixaban, rivaroxaban and dabigatran etexilate. As some people struggle to cope with the rigours of the monitoring regime needed to support warfarin the effect of changing the number of people treated with warfarin has been tested. The cost of implementing this guidance is very sensitive to changes in the number of people treated with warfarin in future.

## **5 Impact of guidance for commissioners**

- 5.1.1 Commissioners for this topic are Clinical Commissioning Groups and NHS England. Atrial fibrillation is managed in acute secondary care, community and primary care settings.

- 5.1.2 There will be increased drug costs for managing stroke risk because of the recommendation to not offer aspirin for stroke risk management. These additional costs will be partly offset by savings from fewer strokes in people with atrial fibrillation.
- 5.1.3 The costs related to atrial fibrillation include some tariff costs, for example ablation to manage atrial fibrillation when drug treatments do not work. There may be a non-recurrent cost impact if referrals are not currently prompt.
- 5.1.4 Atrial fibrillation falls within programme budgeting category 10C (Atrial fibrillation and flutter).

## 6 Conclusion

### 6.1 *Total cost per 100,000 population*

- 6.1.1 Using the significant resource-impact recommendations shown in table 2 and assumptions specified in section 3 we have estimated the annual impact of implementing these recommendations per 100,000 population to be a cost of £88,000. Table 8 shows the breakdown of cost of the significant resource-impact recommendations.

**Table 8 Breakdown of cost for the significant resource impact recommendation**

Current/future costs	Type of costs	Costs £000s
Current costs	Cost of drugs	347
	Cost of adverse events	733
<b>Total current costs</b>		<b>1,080</b>
Future costs	Cost of drugs	654
	Cost of adverse events	513
<b>Total current costs</b>		<b>1,168</b>
<b>Net cost</b>		<b>88</b>

- 6.1.2 The costs presented are estimates of the effect of not offering aspirin monotherapy to reduce stroke risk and assessing stroke risk

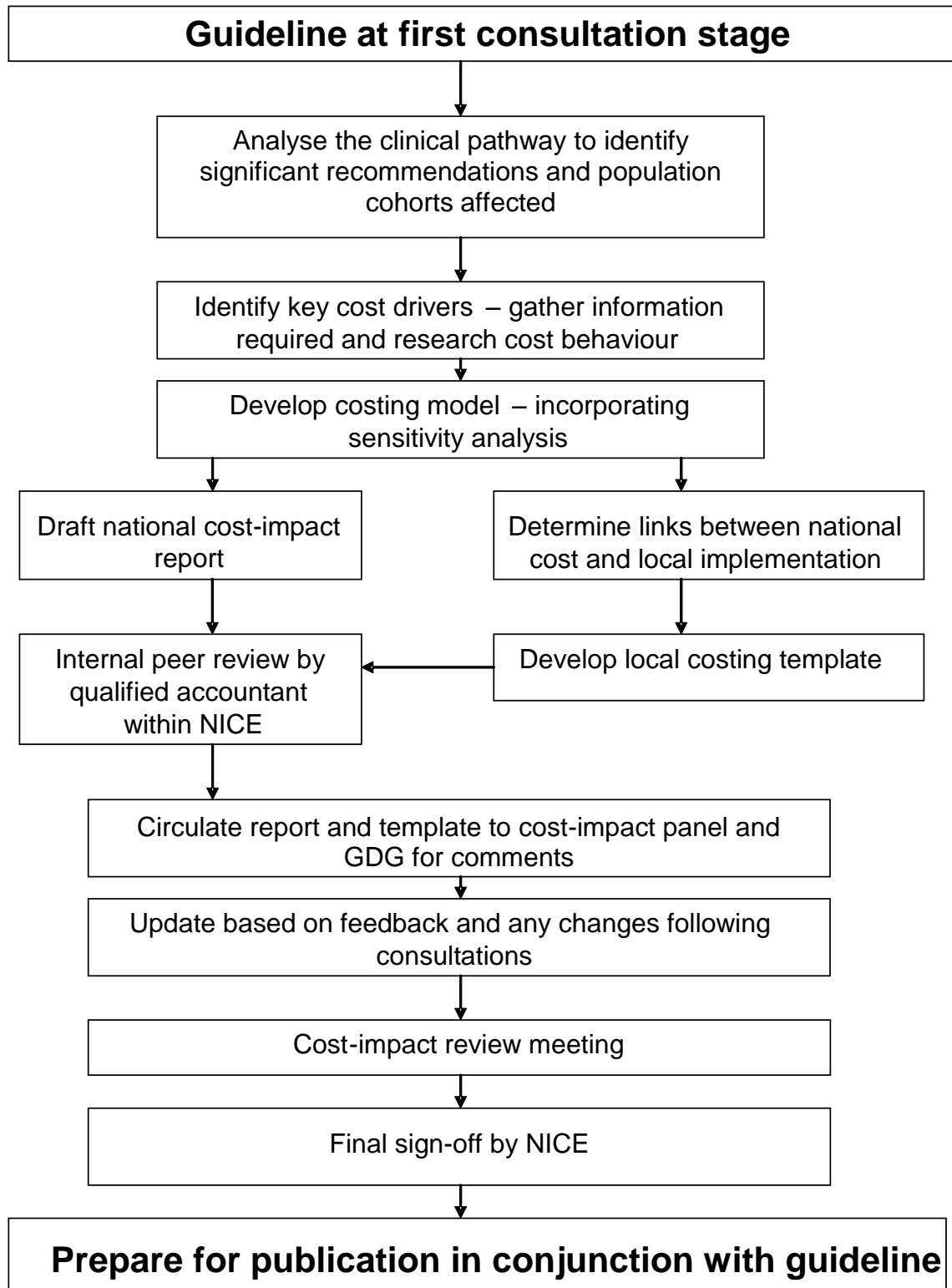
using CHA<sub>2</sub>DS<sub>2</sub>-VASc. They should not be taken as the full cost of implementing the guideline.

- 6.1.3 It has been assumed that people will change treatment from aspirin in the first year. If the change happens over a longer period then the costs are likely to not be as significant in the first year.

## **6.2** *Next steps*

- 6.2.1 The local costing template produced to support this guideline enables organisations such as clinical commissioning groups or health boards in Wales and Northern Ireland to estimate the impact locally and replace variables with ones that depict the current local position. A sample calculation using this template showed that a population of 100,000 could expect to incur costs of £88,000. Use this template to calculate the cost of implementing this guidance, recommendations not covered by the template will need to be assessed locally.

## Appendix A. Approach to costing guidelines



## Appendix B. Results of sensitivity analysis

### Sensitivity analysis - Population of 100,000

Table 1 shows the sensitivity of the total cost of implementation to changes in each variable individually. (If there are two variables that make up 100% between them, they have been varied together to ensure the model remains realistic).

The sensitivity ratio allows comparison of the variables by analysing the percentage changes in the variables and outturn. The closer the ratio is to 1, the more sensitive the overall cost is to fluctuations in the variable.

**Table 1. Individual variable sensitivity**

	Baseline value	Minimum value	Maximum value	Recurrent costs			Change (£000's)	Sensitivity ratio
				Baseline costs (£000's)	Minimum costs (£000's)	Maximum costs (£000's)		
Prevalence of atrial fibrillation	1.60%	1.50%	1.70%	88	83	96	13	0.32
People receiving aspirin	2.50%	1.00%	5.00%	88	94	77	-17	0.03
People being treated with warfarin in future practice	46.74%	40.74%	52.74%	88	129	46	-83	1.00



## Appendix C. References

- 1 IMS Disease Analyzer 2012/13
- 2 GRASP-AF database download, April 2014
- 3 NICE technology appraisal 249 (Dabigatran for atrial fibrillation)
- 4 [BNFwebsite accessed on 01/05/2014](#)