

Osteoarthritis

**Costing report**  
Implementing NICE guidance

February 2008

NICE clinical guideline 59



This costing report accompanies the clinical guideline: 'Osteoarthritis: the care and management of osteoarthritis in adults' (available online at [www.nice.org.uk/CG059](http://www.nice.org.uk/CG059)).

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

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

The cost and activity assessments in the reports are estimates based on a number of assumptions. They provide an indication of the likely impact of the principal recommendations 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 to estimate local impact.

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## Contents

Executive summary.....	4
Supporting implementation.....	4
Significant resource-impact recommendations.....	4
Total cost impact.....	4
Benefits and savings.....	5
Local costing template.....	6
1 Introduction.....	7
1.1 Supporting implementation.....	7
1.2 What is the aim of this report?.....	7
1.3 Epidemiology of osteoarthritis in adults.....	8
1.4 Models of care.....	9
2 Costing methodology.....	9
2.1 Process.....	9
2.2 Scope of the cost-impact analysis.....	10
2.3 General assumptions made.....	12
2.4 Basis of unit costs.....	12
3 Cost of significant resource-impact recommendations.....	13
3.1 Invasive treatments for knee osteoarthritis.....	13
3.2 Topical treatments.....	14
3.3 Proton pump inhibitors.....	16
4 Sensitivity analysis.....	17
4.1 Methodology.....	17
4.2 Impact of sensitivity analysis on costs.....	18
5 Impact of guidance for commissioners.....	19
6 Conclusion.....	20
6.1 Total national cost for England.....	20
6.2 Next steps.....	20
Appendix A. Approach to costing guidelines.....	22
Appendix B. Results of sensitivity analysis.....	23
Appendix C. References.....	24

## **Executive summary**

This costing report looks at the resource impact of implementing the NICE guideline 'Osteoarthritis: the care and management of osteoarthritis in adults' 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.

### ***Supporting implementation***

The NICE clinical guideline on Osteoarthritis is supported by a range of implementation tools available on our website [www.nice.org.uk/CG059](http://www.nice.org.uk/CG059) and detailed in the main body of this report.

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

Because of the breadth and complexity of the guideline, this report focuses on recommendations that are considered to have the greatest resource impact and therefore require the most additional resources to implement or can potentially generate savings. They are:

- Offering referral for arthroscopic lavage and debridement only when the person has knee osteoarthritis with a clear history of mechanical locking.
- Offering topical non-steroidal anti-inflammatory drugs (NSAIDs) ahead of oral NSAIDs, cyclo-oxygenase 2 (COX-2) inhibitors or opioids.
- Co-prescribing proton pump inhibitors with oral NSAIDs/COX-2 inhibitors.

### ***Total cost impact***

The costing model has been based on symptomatic prevalence and incidence of osteoarthritis.

The annual changes in revenue costs arising from fully implementing the guideline are summarised in the table below. It is recognised that implementing the recommendations may take place over a number of years.

<b>Description</b>	<b>Annual costs £000s</b>
<b>Costs</b>	
Topical NSAIDs	8,452
Proton pump inhibitors	10,445
<b>Total costs</b>	<b>18,897</b>
<b>Savings</b>	
Invasive treatment for knee osteoarthritis	-23,614
Oral NSAIDs	-2,536
<b>Total savings</b>	<b>-26,150</b>
<b>Net annual cost/savings (-)</b>	<b>-7,253</b>

NSAIDs, non-steroidal anti-inflammatory drugs.

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

Benefits and savings from implementing this guideline are likely to relate to the following.

- A reduction in the number of GP consultations and hospital admissions. Early diagnosis and advice on core treatment could significantly reduce hospital admissions and morbidity.
- Improved quality of life if people are mobile and able to continue normal every day activities, and consequently increased productivity with fewer working days lost to osteoarthritis.
- Increased use of topical NSAIDs may contribute to a decrease in the use of oral NSAIDs. The costs linked to gastrointestinal bleeds, ulceration and/or cardiovascular events may subsequently fall as a result.
- According to the Prescribing Pricing Authority, 50% of people with osteoarthritis take oral NSAIDs. Clinical opinion suggests that this proportion will decline to approximately 40% once the guideline is implemented because more people will be prescribed topical NSAIDs or paracetamol before oral NSAIDs/COX-II inhibitors.

Osteoarthritis is expected to be the fourth leading cause of disability by the year 2020, as a result of increasing life expectancy and ageing populations. However, demand for treatment of osteoarthritis could mean that savings

achieved through better management may not reduce overall cost, but should reduce additional investment required (Woolf and Pflieger 2003).

NICE guidance is one of the criteria of indicating good risk management strategies and, in combination with meeting other criteria, could lead to a discount on CNST (clinical negligence scheme of trusts) premium.

Furthermore, although it was not identified as a significant resource issue, the guidance makes recommendations on the need for good communication, providing culturally appropriate written information that is tailored to the patient's needs in a language they understand.

### ***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 total annual costs are £41,000 and total savings are £57,000, giving a net saving of £16,000 for a population of 100,000.

# 1 Introduction

## 1.1 *Supporting implementation*

1.1.1 The NICE clinical guideline on osteoarthritis is supported by the following implementation tools available on our website [www.nice.org.uk/CG059](http://www.nice.org.uk/CG059):

- costing tools
  - a national costing report; this document
  - a local costing template; a simple spreadsheet that can be used to estimate the local cost of implementation
- a slide set; key messages for local discussion
- audit support.

1.1.2 A practical guide to implementation, 'How to put NICE guidance into practice: a guide to implementation for organisations', is also available to download from the NICE website. It includes advice on establishing organisational level implementation processes as well as detailed steps for people working to implement different types of guidance on the ground.

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

1.2.1 This report provides estimates of the national cost impact arising from implementation of guidance on care and management of osteoarthritis in adults in England. The 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 organisations plan for the financial implications of implementing NICE guidance.

1.2.3 This report does not reproduce the NICE guideline on osteoarthritis and should be read in conjunction with it (see [www.nice.org.uk/CG059](http://www.nice.org.uk/CG059)).

1.2.4 The costing template that accompanies this report is designed to help those assessing the resource impact at a local level in England. NICE clinical guidelines are developmental standards in the Department of Health's document '[Standards for better health](#)'. The costing template may help inform local action plans demonstrating how implementation of the guideline will be achieved.

### **1.3 *Epidemiology of osteoarthritis in adults***

1.3.1 This guideline uses a working diagnosis definition of osteoarthritis. A clinician's working diagnosis of peripheral joint osteoarthritis is defined as:

- persistent joint pain, worse with use
- age 45 and over, and
- morning stiffness lasting no more than half an hour.

1.3.2 There is little definitive data on the prevalence of the disease because of the problems of defining the disease and how to determine its onset (Woolf and Pfleger 2003).

1.3.3 For the purpose of this report, worldwide symptomatic prevalence of osteoarthritis has been used and was obtained from the Bulletin of the World Health Organization (Woolf and Pfleger 2003).

1.3.4 A range of between 0.5% and 1% was given for the incidence of knee osteoarthritis. A midpoint of 0.75% has been used for costing purposes (Peat et al. 2001).

1.3.5 Table 1 shows the population covered, the prevalence of osteoarthritis and the incidence of knee osteoarthritis used in the cost assessment.

**Table 1 Prevalence of osteoarthritis and the incidence of knee osteoarthritis<sup>1</sup>**

Details	Aged 45 and over	Prevalence of osteoarthritis		Incidence of knee osteoarthritis	
	Number	%	Number	%	Number
Females	10,695,072	18	1,925,113	0.75	80,213
Males	9,393,022	9.6	901,730	0.75	70,448
<b>Total</b>	<b>20,088,093</b>		<b>2,826,843</b>		<b>150,661</b>

1.3.6 The number of people with osteoarthritis in England is increasing as the population ages, and as the prevalence of risk factors such as obesity and poor levels of physical fitness continues to rise.

## **1.4 Models of care**

1.4.1 Current treatments for osteoarthritis are concerned with managing symptoms such as pain. There is no medication that has been proven to prevent the disease or modify its course.

1.4.2 Care for people with osteoarthritis is provided in primary care, secondary care and community settings. The care is delivered through a combination of different techniques ranging from treatment with drugs, exercise, some complementary therapy and surgery provided in secondary care.

## **2 Costing methodology**

### **2.1 Process**

2.1.1 We use a structured approach for costing clinical guidelines (see appendix A).

2.1.2 Little information has been systematically collected about osteoarthritis, and this led to problems in building a comprehensive bottom-up model for costing (a costing methodology where the unit cost of individual elements and number of units are estimated and added together to provide a total cost).

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<sup>1</sup> Prevalence of osteoarthritis and the incidence of knee osteoarthritis are all based on symptomatic diagnosis

2.1.3 It was difficult to obtain relevant symptomatic prevalence and incidence statistics for osteoarthritis. The disease can manifest in multiple sites, making it difficult to obtain the disease prevalence or incidence for specific disease sites.

2.1.4 To overcome this limitation, we had to make assumptions in the costing model. We developed these assumptions and tested them for reasonableness with members of the Guideline Development Group (GDG) and key clinical practitioners in the NHS.

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

2.2.1 The guideline offers best practice advice on the care and management of osteoarthritis in adults with a working diagnosis of osteoarthritis.

2.2.2 The guidance covers management of osteoarthritis in all patients but does not cover management of predisposing and associated conditions including:

- spinal, neck and back pain of mechanical origin
- gout, pseudo-gout
- rheumatoid arthritis
- seronegative arthritides
- septic arthritis
- childhood diseases which predispose people to osteoarthritis, and
- mechanical conditions presenting with joint inflammation, such as haemochromatosis.

2.2.3 Owing to the breadth and complexity of the guideline, 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**

High-cost recommendations	Recommendation number	Key priority?
Referral for arthroscopic lavage and debridement should not be offered as part of treatment of osteoarthritis, unless the person has knee osteoarthritis with a clear history of mechanical locking (not gelling, 'giving way' or X-ray evidence of loose bodies).	1.3.7.1	✓
Healthcare professionals should consider offering topical NSAIDs for pain relief in addition to core treatment for people with knee or hand osteoarthritis. Topical NSAIDs and/or paracetamol should be considered ahead of oral NSAIDs/COX-2 inhibitors or opioids.	1.4.2.1	✓
When offering treatment with an oral NSAID/COX-2 inhibitor, the first choice should be either a standard NSAID or a COX-2 inhibitor (other than etoricoxib 60 mg). In either case, these should be co-prescribed with a proton pump inhibitor, choosing the one with the lowest acquisition cost.	1.4.3.4	✓

COX-2, cyclo-oxygenase 2; NSAIDs, non-steroidal anti-inflammatory drugs.

- 2.2.4 Six of the recommendations in the guideline have been identified as key priorities for implementation, and three of these are also the three recommendations considered to have significant resource impact.
- 2.2.5 One key recommendation concerning advice for people with osteoarthritis on exercise is not considered to have significant resource impact nationally. The cost of exercise was considered in the costing report for PH2 (Physical activity).
- 2.2.6 One key recommendation on offering paracetamol ahead of oral NSAIDs/COX-2 inhibitors or opioids was considered not to have a significant resource impact nationally, because of the low acquisition cost of paracetamol.
- 2.2.7 The final key recommendation on when to offer hip or knee replacements is not considered to have a significant impact on numbers of people referred for surgery, and hence no significant

resource impact. There may be an increase in the number of revisions of joint replacement surgery, if they are offered earlier in the course of the illness. The number of additional revisions is unknown, but is unlikely to be significant over the next 3–5 years.

- 2.2.8 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. Where applicable, any realisable cost savings arising from a change in practice have been offset against the cost of implementing the change.

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

- 2.3.1 The costing report and template has been based on people aged 45 years and over who have a working diagnosis of osteoarthritis.

### **2.4 *Basis of unit costs***

- 2.4.1 The way the NHS is funded has undergone reform with the introduction of 'Payment by results' based on a national tariff. The national tariff will be applied to all activity for which Healthcare Resource Groups (HRGs) or other appropriate case-mix measures are available. Where a national tariff price or indicative price exists for an activity this has been used as the unit cost; this has then been inflated by the national average market forces factor.
- 2.4.2 Using these prices ensures that the costs in the report are the cost to the primary care trust (PCT) of commissioning predicted changes in activity at the tariff price, but may not represent the actual cost to individual trusts of delivering the activity.
- 2.4.3 Drug unit costs have been taken from the 'British national formulary' 54th edition (BNF edition 54) and exclude VAT. NHS organisations may negotiate prices with suppliers depending on the level of purchase: the local template allows this to be factored into the costing calculation.

### **3 Cost of significant resource-impact recommendations**

#### **3.1 *Invasive treatments for knee osteoarthritis***

##### **Background**

- 3.1.1 Referral for arthroscopic lavage and debridement should not be offered as part of treatment for osteoarthritis, unless the person has knee osteoarthritis with a clear history of mechanical locking (not gelling, 'giving way' or X-ray evidence of loose bodies) (recommendation 1.3.7.1).
- 3.1.2 Invasive treatments for knee osteoarthritis have been offered to patients who have failed to respond to the usual medical care. A strong clinical view exists that arthroscopic lavage and debridement can relieve the pain (Livesley et al. 1991) and improve the quality of life of people with knee osteoarthritis.
- 3.1.3 There are no standardised referral criteria for these procedures and evidence in the guideline states that there is no general consensus on which patients should be offered the procedures.

##### **Assumptions made**

- 3.1.4 Based on the 2005/06 Hospital Episode Statistics, the total number of people aged 45 years and over who received arthroscopic lavage and debridement for knee osteoarthritis is 19,686.
- 3.1.5 The incidence of knee osteoarthritis used is 0.75% (150,661). This figure is based on the annual incidence of consultations for symptomatic knee osteoarthritis for those aged 55 years and over (Peat et al. 2001). We have assumed this incidence to apply to younger people aged between 45 and 54.
- 3.1.6 It has been assumed, based on clinical opinion, that 0.67% (1000) of the people aged 45 years and over with knee osteoarthritis have

a clear history of mechanical locking and therefore will be referred for arthroscopic lavage and debridement.

- 3.1.7 The national tariff for 2008/09 for the Health Resource Group (HRG) H10 (arthroscopies), uplifted by the national average market forces factor of 1.1249, is £1264.

### Cost summary

- 3.1.8 The number of invasive treatments for the knee is expected to fall from 20,000 to 1000, a reduction of 19,000.
- 3.1.9 The net saving as a result of the fall in the invasive treatments for the knee is summarised in table 3.

**Table 3 Invasive treatments for knee osteoarthritis**

	Unit cost	Current		Proposed		Change	
		Numbers of patients	Cost (£000s)	Numbers of patients	Cost (£000s)	Numbers of patients	Cost (£000s)
Invasive treatments	£1264	20,000	24,891	1000	1270	-19,000	-23,614

## 3.2 Topical treatments

### Background

- 3.2.1 Healthcare professionals should consider offering topical NSAIDs for pain relief in addition to core treatment for people with knee or hand osteoarthritis. Topical NSAIDs and/or paracetamol should be considered ahead of oral NSAIDs, COX-2 inhibitors or opioids (recommendation 1.4.2.1).

### Assumptions made

- 3.2.2 The total number of people who have an osteoarthritis diagnosis and who are currently receiving topical NSAIDs is 167,000. The estimate has been based on the numbers of people with and without osteoarthritis who were prescribed topical NSAIDs at a sample of GP practices in England.

- 3.2.3 The average annual number of items of topical NSAIDs prescribed to each person is eight, based on 2005/06 prescribing data.
- 3.2.4 The volume of current topical NSAIDs used for osteoarthritis is estimated at 1,690,200 items. The estimate is based on 167,000 people with osteoarthritis who are assumed to be receiving eight items of topical NSAIDs annually.
- 3.2.5 It is assumed, based on clinical opinion, that the number of topical NSAID items prescribed will double once the guideline is implemented.
- 3.2.6 The average cost per item of topical NSAIDs is £6.32, based on the 2005/06 average prescription cost per item uplifted to reflect 2008/09 prices.

### Cost summary

- 3.2.7 The number of items of topical NSAIDs prescribed is expected to increase from 1,690,200 items to 3,380,400 items, an increase of 1,690,200 items.
- 3.2.8 The net cost of using topical NSAIDs ahead of oral NSAIDs/COX-2 inhibitors or opioids is summarised in table 4.

**Table 4 Topical NSAIDs**

	Unit cost	Current		Proposed		Change	
		Number of items prescribed	Cost (£000s)	Number of items prescribed	Cost (£000s)	Number of items prescribed	Cost (£000s)
Topical NSAIDs	£6.32	1,690,200	8,452	3,380,400	16,904	1,690,200	8,452

NSAIDs, non-steroidal anti-inflammatory drugs.

### Other considerations

- 3.2.9 There is no specific NSAID recommended, and so the cost may be different for local organisations. The local template can be adjusted to local circumstances.

- 3.2.10 An increased use of topical NSAIDs will contribute to a decrease in the use of oral NSAIDs by approximately 10%, based on clinical opinion, with consequent savings of approximately £2.5 million. Additional costs linked to gastrointestinal bleeds, ulceration and/or cardiovascular events may also fall as a result.

### **3.3 Proton pump inhibitors**

#### **Background**

- 3.3.1 When offering treatment with an oral NSAID/COX-2 inhibitor, the first choice should be either a standard NSAID or a COX-2 inhibitor (other than etoricoxib 60 mg). In either case, these should be co-prescribed with a proton pump inhibitor, choosing the one with the lowest acquisition cost (recommendation 1.4.3.4).

#### **Assumptions made**

- 3.3.2 It has been assumed that all people with osteoarthritis, who fall under the working diagnosis of osteoarthritis and who are prescribed oral NSAIDs/COX-2 inhibitors, will be prescribed proton pump inhibitors irrespective of their gastrointestinal status.
- 3.3.3 The total number of people with osteoarthritis who are prescribed oral NSAIDs is estimated to be 50% (1,413,000) and is based on data obtained from the Prescription Pricing Authority newsletter of March 2005.
- 3.3.4 Of all the people with osteoarthritis who take oral NSAIDs/COX-2 inhibitors, 2% (28,000) are estimated to develop gastrointestinal complications (BMJ 2004, Targownik and Thomson 2006).
- 3.3.5 Clinical opinion suggested that 10% (approximately 3000) of the people with osteoarthritis who also have gastrointestinal complications and are currently receiving oral NSAIDs/COX-2 inhibitors are prescribed proton pump inhibitors.

3.3.6 The annual cost of omeprazole capsules, the cheapest generically available proton pump inhibitor, is £9.26 based on NSAIDs/COX-2 inhibitors (and consequently proton pump inhibitors) being prescribed for a total of 2 months in a 12-month period (based on expert clinical opinion). How the proton pump inhibitors are prescribed will vary from person to person. The current cost was obtained from the BNF edition 54. The cost is based on 20 mg daily of omeprazole capsules for 8 weeks.

### Cost summary

3.3.7 The number of people prescribed proton pump inhibitors is expected to increase from 3000 to 1,130,700, as all people taking oral NSAIDs/COX-2 inhibitors will be prescribed proton pump inhibitors (an increase of 1,127,700).

3.3.8 The net cost of co-prescribing NSAIDs/COX-2 inhibitors with proton pump inhibitors is given in table 5.

**Table 5 Proton pump inhibitors**

	Unit cost	Current		Proposed		Change	
		Numbers of patients	Cost (£000s)	Numbers of patients	Cost (£000s)	Numbers of patients	Cost (£000s)
Proton pump inhibitors	£9.26	3000	26	1,130,700	10,471	1,127,700	10,445

## 4 Sensitivity analysis

### 4.1 Methodology

4.1.1 There are a number of assumptions in the model for which no empirical evidence exists. Because of the limited data, the model developed is based mainly on discussions of typical values and predictions of how things might change as a result of implementing the guidance and is therefore subject to a degree of uncertainty.

- 4.1.2 As part of discussions with practitioners, we discussed possible minimum and maximum values of variables, and calculated their impact on costs across this range.
- 4.1.3 Wherever possible we have used the national tariff plus market forces factor to determine cost. We used the variation of costs for the 25th and 75th percentiles from reference costs compared with the reference cost national average as a guide to inform the maximum and minimum range of costs.
- 4.1.4 It is not possible to arrive at an overall range for total cost because the minimum or maximum of individual lines would not 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.
- 4.1.5 A sensitivity test has been applied to the costing template each time varying the price of drugs and/or procedures.
- 4.1.6 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***

### **Cost of topical NSAIDs**

- 4.2.1 Varying the price of topical NSAIDs between the lowest cost of £2.45 and highest cost of £15.04 results in implementation costs ranging from a saving of £12.4 million to a cost of £4.4 million.

### **Cost of proton pump inhibitor (omeprazole)**

- 4.2.2 Clinical opinion is that for the majority of patients NSAIDs will be used for short periods of time rather than repeating monthly prescriptions. Adjusting the prescription period of proton pump inhibitor (omeprazole) creates a significant degree of uncertainty within the costing model.

- 4.2.3 Varying the prescription of omeprazole from a 4-week period to a 16-week period results in implementation costs ranging from a saving of £12.5 million to a cost of £3.1 million.

### **Cost of arthroscopy**

- 4.2.4 Varying the cost of arthroscopy from a minimum cost of £994 to maximum cost of £1797, based on the 25th and 75th interquartile range of reference costs (2005/06), results in implementation savings ranging from £2.2 million to £17.2 million.

### **Prevalence of osteoarthritis**

- 4.2.5 The prevalence of osteoarthritis used in the costing model is based on worldwide figures.
- 4.2.6 Varying the prevalence of osteoarthritis from 16% to 20% for the female population and 7.6% to 11.6% for the male population results in implementation savings ranging from £6.1 million to £8.4 million.

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

- 5.1.1 Invasive treatments for knee osteoarthritis fall under the scope of 'Payment by results'. However, although prescribing of topical NSAIDs and proton pump inhibitors for osteoarthritis may be initiated in secondary care, it is likely to be mainly carried out in primary care and hence fall outside the scope of 'Payment by results'.
- 5.1.2 The costs for invasive procedures for knee osteoarthritis and topical NSAIDs fall under the programme budgeting category 15X (musculoskeletal problems). However, the prescribing of proton pump inhibitors falls under programme budgeting category 13A (problems of the gastro intestinal system [upper GI]).

## 6 Conclusion

### 6.1 *Total national cost for England*

6.1.1 Using the significant resource-impact recommendations shown in table 2 and assumptions specified in section 3 we have estimated the annual savings of fully implementing the guideline in England to be £7.3 million. Table 6 shows the breakdown of cost of each significant resource-impact recommendation.

**Table 6 Net impact on resources**

Description	Annual costs £000s
<b>Costs</b>	
Topical NSAIDs	8,452
Proton pump inhibitors	10,445
<b>Total costs</b>	<b>18,897</b>
<b>Savings</b>	
Invasive treatment for knee osteoarthritis	-23,614
Oral NSAIDs	-2,536
<b>Total savings</b>	<b>-26,150</b>
<b>Net cost/savings (-)</b>	<b>-7,253</b>

NSAIDs, non-steroidal anti-inflammatory drugs.

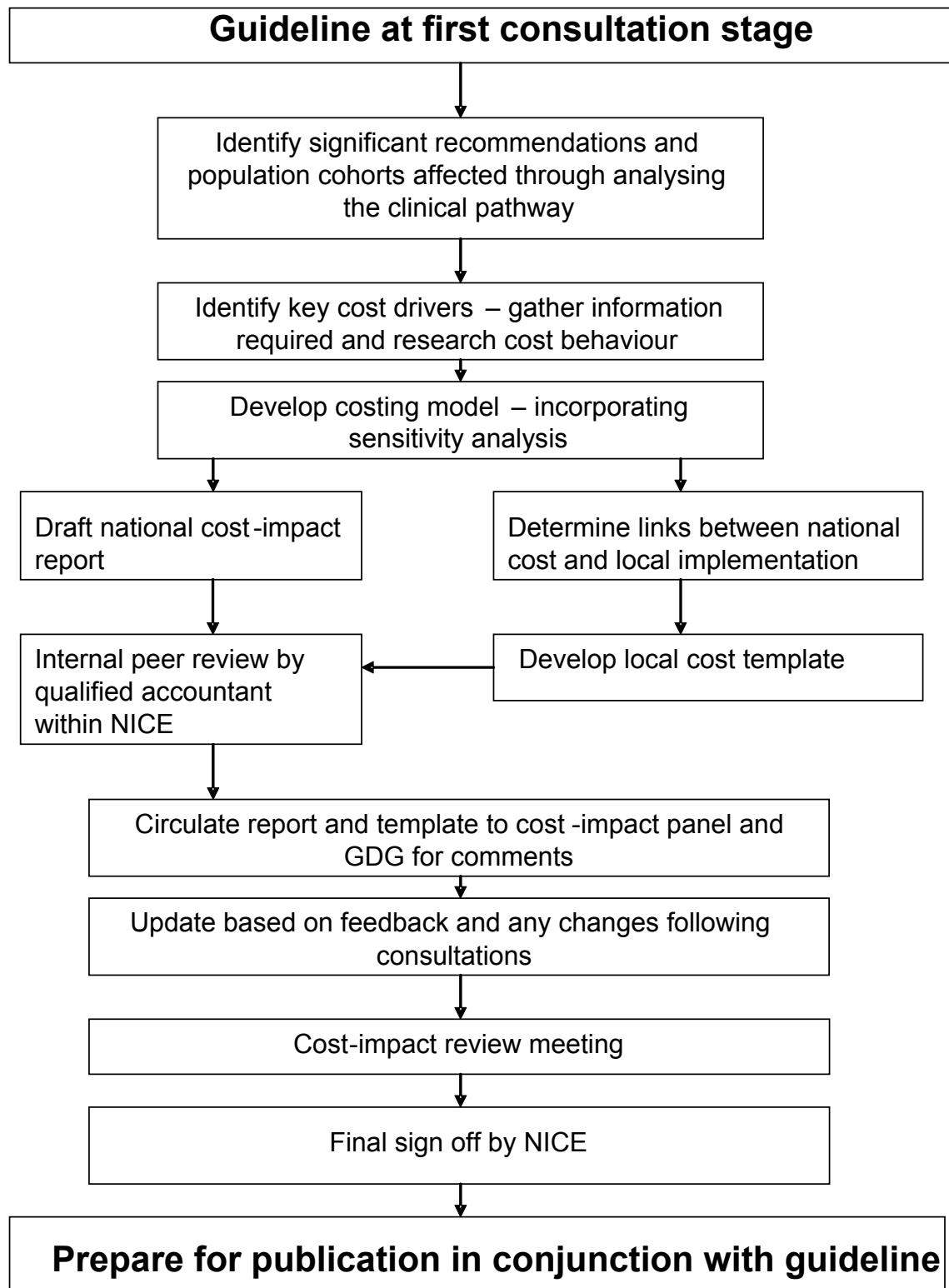
6.1.2 We applied reality tests against existing data wherever possible, but this was limited by the availability of detailed data. We consider this assessment to be reasonable, given the limited detailed data regarding diagnosis and treatment paths and the time available. However, the costs presented are estimates and should not be taken as the full cost of implementing the guideline.

### 6.2 *Next steps*

6.2.1 The local costing template produced to support this guideline enables organisations such as PCTs 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 additional savings of £16,000. Use this template to calculate the cost of implementing this guidance in your area.

## Appendix A. Approach to costing guidelines



## Appendix B. Results of sensitivity analysis

Assessment of sensitivity costs to a range of variables		Baseline value	Minimum value	Maximum value	Baseline costs £000s	Minimum costs £000s	Maximum costs £000s	Change £000s
<b>Parameter varied</b>								
	Prevalence of osteoarthritis (Female)	18.00%	16.00%	20.00%	-7,253	-6,129	-8,377	-2,248
	Prevalence of osteoarthritis (Male)	9.60%	7.60%	11.60%	-7,253	-6,129	-8,377	-2,248
	Cost of arthroscopy - H10	£1,264	£994	£1,797	-7,253	-2,209	-17,211	-15,002
	Incidence of knee osteoarthritis	0.75%	0.50%	1.00%	-7,253	-6,830	-7,675	-845
	People with a clear history of mechanical locking	0.67%	0.50%	0.84%	-7,253	-6,922	-7,570	-648
	Cost of a topical NSAIDs	£6.32	£2.45	£15.04	-7,253	-12,429	4,409	16,838
	People with osteoarthritis, expected to take oral NSAIDs	40.00%	30.00%	50.00%	-7,253	-2,100	-12,407	-10,307
	People taking oral NSAIDs and who developed GI complications	2.00%	1.00%	3.00%	-7,253	-7,240	-7,266	-26
	Proportion of people currently taking proton pump inhibitors	10.00%	5.00%	15.00%	-7,253	-7,240	-7,266	-26
	Cost of omeprazole caps - 28 caps pack (max cost 16 weeks in a year)	£9.26	£4.63	£18.52	-7,253	-12,475	3,191	15,666

## Appendix C. References

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