

Prostate cancer:
diagnosis and treatment

Costing report
Implementing NICE guidance

February 2008

This costing report accompanies the clinical guideline: 'Prostate cancer: diagnosis and treatment' (available online at www.nice.org.uk/CG058).

Issue date: February 2008

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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Executive summary

This costing report looks at the resource impact of implementing the NICE guideline 'Prostate cancer: diagnosis and treatment' 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 prostate cancer is supported by a range of implementation tools available on our website www.nice.org.uk/CG058 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:

- the decision whether or not to biopsy
- offering active surveillance
- the recommended course of radical external beam radiotherapy
- hormonal therapy
- access to palliative care.

Total resource impact

The annual changes in revenue costs arising from fully implementing the guideline are summarised in the table below.

Recommendation	Estimated cost / (saving) of implementing £000s
Decision whether or not to biopsy	(2,168)
Offering active surveillance	(1,346)
Radical external beam radiotherapy	5,805
Hormonal therapy	(5,055)
Total saving	(2,764)
Access to palliative care	*

* Likely to have material resource implications but not quantified in this report, see section 3.5 for more information. Economic modelling was undertaken to estimate the overall cost of providing a full range of supportive and palliative care in England and Wales by NICE in March 2004.

It is suggested that readers also look at the costing completed for 'Docetaxel for the treatment of hormone refractory prostate cancer' (NICE technology appraisal 101).

Additional savings may be achievable above the £2.7 million identified; these are highlighted in the report but not quantified. Expenditure for prostate cancer will fall under programme budgeting category 2X cancers and tumours.

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 savings of £10,000 could be incurred for a population of 100,000.

1 Introduction

1.1 *Supporting implementation*

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

www.nice.org.uk/CG058

- 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
- implementation advice; practical suggestions on how to address potential barriers to implementation
- 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 prostate cancer in England. These estimates are based on assumptions made about current practice and predictions of how current practice might change following implementation.

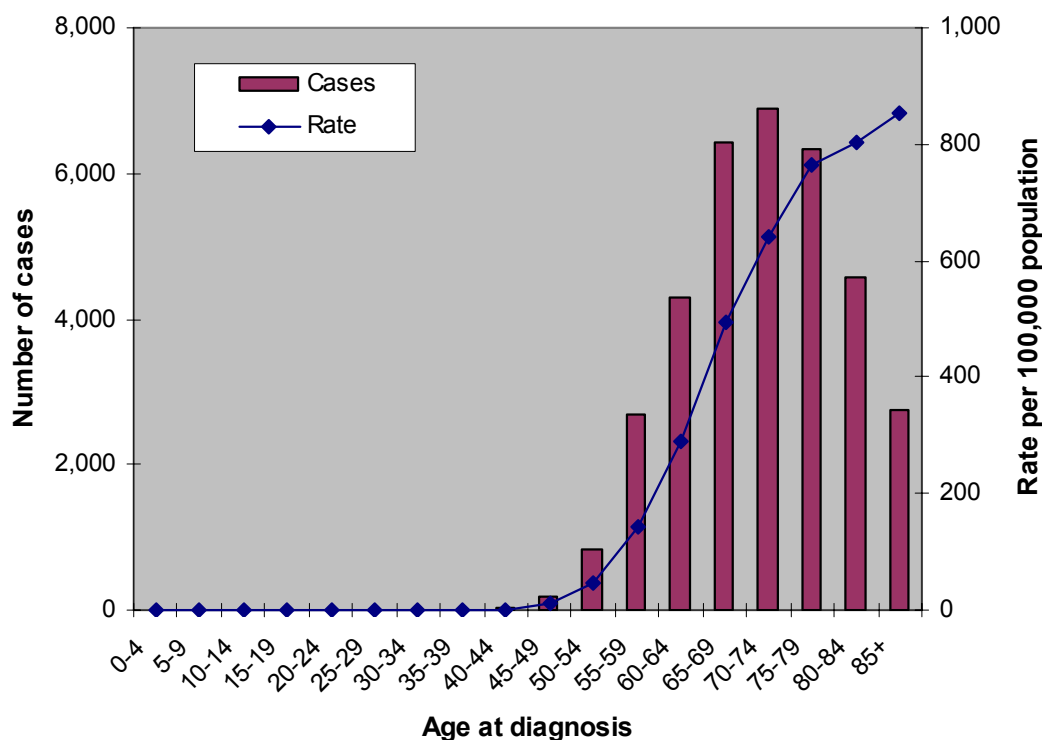
1.2.2 This report aims to help organisations plan for the financial implications of implementing this NICE guidance.

- 1.2.3 This report does not reproduce the NICE guideline on prostate cancer and should be read in conjunction with it (see www.nice.org.uk/CG058).
- 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, Wales or Northern Ireland. 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 prostate cancer*

- 1.3.1 Prostate cancer is the most common cancer in men, it accounts for nearly a quarter (24%) of all new male diagnoses of cancer (Cancer Research UK).
- 1.3.2 Prostate cancer is perhaps the most enigmatic malignancy in men. If men lived long enough, they would almost all die with histological evidence of the disease (Selly et al, 1997). However, only 3% of men would die as a consequence of prostate cancer.
- 1.3.3 Prostate cancer risk is strongly related to age; very few cases are registered in men under 50 years and around 60% of cases occur in men over 70 years of age (see figure 1).
- 1.3.4 The annual incidence and number of cases of prostate cancer in the UK is illustrated in figure 1, as reported by Cancer Research UK. The annual incidence in England is about 29,000 cases.

Figure 1 Numbers of new cases and age-specific incidence rates for prostate cancer in the UK (2004).



1.3.5 Even assuming that current incidence rates remain at their present level, ageing of the population will mean that the total number of men presenting with prostate cancer is likely to increase in the coming years.

1.4 Models of care

1.4.1 It is assumed that following implementation there will be a reduction in the number of biopsies undertaken for prostate cancer. It is also thought that prostatectomies will decrease, as will prescribing of luteinising hormone-releasing hormone agonists (LHRHa).

1.4.2 The number of fractions given to men undergoing radical external beam radiotherapy is also likely to increase above the current level.

1.4.3 It is thought that implementation of this guideline will result in improved access to palliative care services. Although the costs

associated with implementation have not been quantified in this report, see 3.5 for additional information.

2 Costing methodology

2.1 Process

- 2.1.1 We use a structured approach for costing clinical guidelines (see appendix A).
- 2.1.2 Good quality data is available on the incidence of prostate cancer in the UK; this data has been employed in this report and the costing model.
- 2.1.3 Limited national information has been systematically collected about treating prostate cancer, 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). 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.
- 2.1.4 [Radiotherapy episode statistics](#) (RES) data have been used to calculate radiotherapy activity.

2.2 Scope of the cost-impact analysis

- 2.2.1 The guideline offers best practice advice on the care of men who are suspected of having, or are diagnosed with prostate cancer.
- 2.2.2 The guideline does not cover screening for prostate cancer, therefore this issue is outside the scope of the costing work.
- 2.2.3 Due 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 1).

Costing work has focused on these recommendations.

Table 1 Recommendations with a significant resource impact.

Significant resource recommendations	Recommendation number	Key priority?
To help men decide whether to have a prostate biopsy, healthcare professionals should discuss with them their prostate specific antigen (PSA) level, digital rectal examination (DRE) findings (including an estimate of prostate size) and comorbidities, together with their risk factors (including increasing age and black African or black Caribbean ethnicity) and any history of a previous negative prostate biopsy. The serum PSA level alone should not automatically lead to a prostate biopsy.	1.2.1	Y
Men with low-risk localised prostate cancer who are considered suitable for radical treatment should first be offered active surveillance.	1.3.3	Y
Men undergoing radical external beam radiotherapy for localised prostate cancer* should receive a minimum of 74 Gy to the prostate at no more than 2 Gy per fraction.	1.3.15	Y
Hormonal therapy is not routinely recommended for men with prostate cancer who have a biochemical relapse unless they have: symptomatic local disease progression, or any proven metastases, or PSA doubling time <3 months.	1.5.9	Y
Healthcare professionals should ensure that palliative care is available when needed and is not limited to the end of life. It should not be restricted to being associated with hospice care.	1.7.27	Y

* This may also apply to some men with locally advanced prostate cancer.

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

- 2.2.5 Six of the key priorities for implementation were not thought to have resource implications. These six recommendations were not included in the costing as it was thought that nationally the resources involved in implementation would not be significant. However it should be highlighted that at a local level these costs may be material and should, if necessary, be further investigated.
- 2.2.6 It is believed that healthcare professionals currently inform men with prostate cancer and their partners or carers about the effects of prostate cancer. If a minority do not provide the level of information and support recommended by the guideline the additional resources required will not be material.
- 2.2.7 Following discussion with clinicians it is assumed that access to specialist erectile dysfunction services and specialist continence services is available. If at a local level these services are not available, the costs associated with implementation will need to be further investigated.
- 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 model is based on annual incidence estimates, as reported by Cancer Research UK (see figure 1).
- 2.3.2 The number of surgical procedures currently undertaken for prostate cancer has been estimated using hospital episodes statistics data (HES), based on 2005/06 activity.

2.3.3 Radiotherapy episode statistic (RES) data were used to estimate the current baseline use of radiotherapy and the increase required to meet the recommendations made in the guideline.

2.3.4 Prescribing data was taken from the prescription cost analysis (PCA) data in 2006.

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 Where possible unit costs have been taken from the 2008/09 national tariff and uplifted by the average market forces factor (MFF) of 1.1249.

Table 2 Estimated costs of treatment for prostate cancer.

Procedure / Description	Code	Description	Tariff (incl MFF)
Prostatectomy	L25	Bladder neck open procedures	£4,425
Prostate biopsy	OPNBP1	Needle biopsy of prostate	£299
Radiotherapy fraction	W1316X	Complex teletherapy with imaging	£135

3 Cost of significant resource-impact recommendations

3.1 *Decision whether or not to proceed to prostate biopsy*

Background

- 3.1.1 To help men decide whether to have a prostate biopsy, healthcare professionals should discuss with them their prostate specific antigen (PSA) level, digital rectal examination (DRE) findings (including an estimate of prostate size) and comorbidities, together with their risk factors (including increasing age and black African or black Caribbean ethnicity) and any history of a previous negative prostate biopsy. The serum PSA level alone should not automatically lead to a prostate biopsy (recommendation 1.2.1).
- 3.1.2 The aim of prostate biopsy is not to detect each and every prostate cancer. The prostate cancer prevention trial (PCPT) demonstrated that the majority of prostate cancers are in men with normal PSA levels. The aim of biopsy is actually to detect those prostate cancers with the potential to cause harm.
- 3.1.3 In order to identify men who are most suitable for prostate biopsy, there is a need to identify a group at high risk, not just of prostate cancer, but of significant prostate cancer.

Assumptions made

- 3.1.4 The annual number of needle biopsies performed nationally is not well recorded as they are commonly carried out as outpatient procedures, with details not being accurately collected.
- 3.1.5 An estimate of the annual number of needle biopsies performed in England and Wales is between 56,000 and 89,000 per year (prostate cancer, full guideline). This estimate is based on calculations which refer to primary diagnostic biopsies only.

3.1.6 For this report it is assumed that 72,500 prostate biopsies are undertaken in England each year. The upper and lower estimates are investigated further in the sensitivity analysis.

3.1.7 It is assumed that the majority of these biopsies are now commissioned as outpatient procedures through the national tariff. However it should be highlighted that some organisations may commission these biopsies as day-cases, or possibly 'standard' outpatients.

Table 3 Needle biopsy of prostate as reported in the 2008/09 tariff, including average market forces factor (MFF).

Procedure code	Procedure	Unit cost (incl MFF)
OPNBP1	Needle biopsy of prostate	£299

3.1.8 Following expert opinion it is assumed that implementation of this recommendation will result in a reduction in the number of prostate biopsies undertaken. However it should be highlighted that making estimates of the reduction in biopsies is challenging and subject to uncertainty.

3.1.9 Discussions with clinical experts suggest that a reduction in the number of biopsies could range from 5 to 15%. In this report a midpoint figure of 10% has been used.

Cost summary

3.1.10 The net resource of the decision on whether or not to proceed to biopsy is summarised in table 4. Potential annual savings through more restrictive use of prostate biopsies are estimated at being £2.2 million.

Table 4 Potential savings following a 10% reduction in the number of prostate biopsies undertaken.

		Current		Proposed		Change	
	Unit cost	Numbers of biopsies	Cost (£000)	Numbers of biopsies	Cost (£000s)	Numbers of biopsies	Saving (£000s)
Biopsies	£299	72,500	21,678	65,250	19,509	-7,250	(2,168)
Total saving							(2,168)

Other considerations

- 3.1.11 As previously highlighted, making estimates concerning a reduction in prostate biopsies is challenging and subject to uncertainty. The sensitivity analysis included in this report investigates savings achieved through a 5 and 15% reduction in prostate biopsies.
- 3.1.12 It is recommended that additional work is undertaken at a local level investigating any reduction in the number of biopsies undertaken and the associated savings.

3.2 *Increased use of active surveillance*

Background

- 3.2.1 Men with low-risk localised prostate cancer who are considered suitable for radical treatment should first be offered active surveillance (recommendation 1.3.3).
- 3.2.2 The objective of active surveillance is to avoid unnecessary treatment of men with slow-growing cancer, by only treating those whose cancers show early signs of progression.
- 3.2.3 Active surveillance enables the risk category to be reassessed at regular intervals by serial PSA estimations, and transrectal ultrasound (TRUS) guided prostate biopsy.
- 3.2.4 The costing report has attempted to calculate the savings associated with increased use of active surveillance through a reduction in surgical procedures. It should be noted that increased use of active surveillance may also result in a reduction in external beam radiotherapy, although limited data are available to allow this reduction to be quantified.

Assumptions made

- 3.2.5 It is assumed that implementation of this recommendation will result in a reduction in the annual number of prostatectomies undertaken in England.
- 3.2.6 Hospital episode statistics (HES) 2005/06 data have been used to calculate the annual number of surgical prostatectomies undertaken for prostate cancer, see table 5 below.

Table 5 Estimated current annual number of prostatectomies undertaken for prostate cancer.

Primary diagnosis code	Main operative code	Operation description	Total episodes
C61	M61	Open excision of prostate	3,258

- 3.2.7 It would be reasonable to assume that an increase in the use of active surveillance would result in a reduction in the annual number of surgical procedures undertaken for prostate cancer.
- 3.2.8 For commissioning, the surgical procedure 'open excision of prostate' maps to the healthcare resource group L25 'Bladder neck open procedures male'.
- 3.2.9 Using the 2008/09 national tariff and applying the average market forces factor, the unit cost of 'open excision of prostate' is £4,425.
- 3.2.10 Based on expert opinion it is assumed that following implementation the annual number of prostatectomies undertaken will reduce by between 5 and 15%. A midpoint of 10% has been used with the upper and lower estimates being further investigated in the sensitivity analysis.
- 3.2.11 For those men that do not have a prostatectomy and instead undergo an active surveillance regime, it is assumed they will receive an additional biopsy, the cost of which needs to be offset against any potential savings achieved through more restrictive use of prostatectomies.
- 3.2.12 As outlined in table 3, the unit cost of a prostate biopsy is estimated to be £299, although local commissioning practice may vary. Assuming each of the 326 men identified receive an additional biopsy, the additional cost would be about £0.1 million.

Cost summary

- 3.2.13 The net saving through more restrictive use of prostatectomies is estimated to be £1.3 million, as calculated in table 6.

Table 6 Potential savings from more restrictive use of surgical procedures for prostate cancer, through greater use of active surveillance.

	Unit cost	Current		Proposed		Change	
		Numbers of procedures	Cost (£000)	Numbers of procedures	Cost (£000s)	Procedures	Saving (£000s)
Open excision of prostate	£4,425	3,258	14,417	2,932	12,974	-326	(1,443)
Additional biopsies	£299			326	97		97
Total saving							(1,346)

Other considerations

3.2.14 Making estimates about a reduction in prostatectomies is challenging and subject to a degree of uncertainty. The sensitivity analysis included in the report investigates the financial impact of a 5 and 15% reduction in prostatectomies.

3.2.15 Active surveillance is an alternative to any radical therapy. The savings of £1.4 million identified relate to a reduction in surgery. It would also seem reasonable to assume that savings may be achieved through a reduction in brachytherapy and external beam radiotherapy.

Brachytherapy

3.2.16 The potential savings associated with a reduction in brachytherapy through increased use of active surveillance have not been quantified in this report or in the accompanying template.

3.2.17 In 2006 the estimated number of men receiving brachytherapy for prostate cancer was 1,044 (Prostate Brachytherapy Advisory Group).

3.2.18 It is thought that the costs of brachytherapy are around £3,500 to £4,000 per patient. Assuming that around 10% of the men currently receiving brachytherapy could potentially receive active

surveillance and thus avoid the costs of brachytherapy, the savings would be around £0.4 million.

External beam radiotherapy

- 3.2.19 As with brachytherapy the potential savings associated with a reduction in external beam radiotherapy have not been quantified in this costing report, or in the accompanying template.
- 3.2.20 Savings associated with a reduction in external beam radiotherapy through increased use of active surveillance could be significant, although limited data are available to enable these savings to be identified.
- 3.2.21 It is recommended that local organisations investigate the potential changes in the number of men receiving external beam radiotherapy for their prostate cancer as a result of increased use of active surveillance.

3.3 Radical external beam radiotherapy

Background

- 3.3.1 Men undergoing radical external beam radiotherapy for localised prostate cancer should receive a minimum of 74 Gy to the prostate at no more than 2 Gy per fraction (recommendation 1.3.15, this may also apply to some men with locally advanced prostate cancer).
- 3.3.2 External beam radiotherapy is the commonest treatment in the UK for men diagnosed with localised prostate cancer. It is usually preceded by a period of hormonal therapy, and is given as daily fractions over 4–8 weeks on an outpatient basis.
- 3.3.3 The amount of radiation used in radiation therapy is measured in gray (Gy). Radiotherapy is usually given over an extended period of time. The dose delivered at each treatment is known as a fraction; therefore 74 Gy at no more than 2 Gy per fraction is equal to 37 outpatient attendances.

Assumptions made

- 3.3.4 It is assumed that radiotherapy for prostate cancer is commissioned through an outpatient attendance using the 2008/09 radiotherapy indicative tariff. The 2008/09 cost per attendance for radiotherapy is £135 including average MFF.

Table 7 Unit cost per fraction to receive radiotherapy.

Code	Description	Unit cost (Incl MFF)
W1316X	Complex teletherapy with Imaging	£135

- 3.3.5 The £135 unit cost for radiotherapy is a fully absorbed cost, and therefore includes the full cost of providing the service, including capital costs and depreciation.

- 3.3.6 The current number of radiotherapy fractions given to men receiving radical radiotherapy for prostate cancer has been estimated using data from the radiotherapy episode statistics (RES) database.
- 3.3.7 Data from the RES project indicates that implementing a regime of 74 Gy in 37 fractions for all patients currently receiving radical radiotherapy for prostate cancer would result in an additional 43,000 fractions of radiotherapy in England.
- 3.3.8 The projected increase of 43,000 fractions is based on data from 24 centres in the UK that provided the RES project with good diagnosis and regime data for the period 2000-2005. These data were used to calculate the percentage of all courses of radiotherapy delivered for patients receiving radical prostate therapy, and the spread of fractions within these courses.
- 3.3.9 The percentages identified were then applied to the 2006/07 all-England activity data taken from the radiotherapy equipment survey (2007). The RES team then calculated the current number of patients being treated with each regime, and identified the additional fractions required to treat all patients with 37 fractions.

Table 8 Estimated increases in the number of fractions required in England to provide a regime of 74Gy in 37 fractions.

Current fractions	Proposed fractions	Increase
117,000	160,000	43,000

Cost summary

- 3.3.10 Based on the assumptions outlined above the cost of providing an additional 43,000 fractions is £5.8 million, as calculated in table 9 below.

Table 9 Estimated costs of providing additional radiotherapy fractions for prostate cancer patients.

	Unit cost	Current		Proposed		Change	
		Fractions	Cost (£000)	Fractions	Cost (£000s)	Attendances	Cost (£000s)
Radiology fractions	£135	117,000	15,795	160,000	21,600	43,000	5,805
Total cost							5,805

Other considerations

- 3.3.11 The calculations on the costs associated with providing a regime of 74 Gy in 37 fractions are based on the assumption that there will be no change in the overall proportion of men that receive radiotherapy for their prostate cancer.
- 3.3.12 It should be highlighted that recommending 74 Gy in a 37 fraction regime may also require the implementation of conformal radiotherapy at some centres. If sites need to implement conformal radiotherapy there would be additional (possibly significant) costs in terms of equipment and software upgrades, development time and training.
- 3.3.13 Radiotherapy treatment for prostate cancer has been calculated in a report by the National Radiotherapy Advisory Group 'Radiotherapy: developing a world class service for England'. The report concluded that the current provision of radiotherapy was not sufficient, and more men with prostate cancer would benefit from radiotherapy.

3.4 Hormonal therapy

Background

3.4.1 Hormonal therapy is not routinely recommended for men with prostate cancer who have a biochemical relapse unless they have:

- symptomatic local disease progression, or
- any proven metastases, or
- PSA doubling time <3 months. (recommendation 1.5.9)

3.4.2 Luteinising hormone-releasing hormone agonists (LHRHa) work in prostate cancer by providing medical castration, as opposed to performing a surgical castration by orchidectomy.

3.4.3 Hormonal therapy constitutes a large area of cancer drug spending. The total spend under British National Formulary (BNF) section 8 'Malignant Disease & Immunosuppression' as reported by prescription cost analysis (PCA) data in 2006 was £300 million.

3.4.4 The annual cost of hormone treatment for prostate cancer is estimated to be £126 million, as reported by PCA data in 2006, see table 10 for breakdown by active substance.

Table 10 Expenditure on hormone therapy for prostate cancer in 2006.

BNF active substance name	Total expenditure £000s
Bicalutamide	34,841
Buserelin	21
Cyproterone	2,208
Flutamide	277
Goserelin acetate	64,881
Leuprorelin acetate	23,317
Triptorelin	831
Total expenditure	126,375

Assumptions made

3.4.5 It is assumed that implementation of this recommendation will result in a reduction in the prescribing of hormonal therapies for prostate cancer.

3.4.6 Estimates for the reductions in prescribing ranged from 2 to 6%. For the purposes of this report a midpoint of 4% has been used, with the upper and lower estimates investigated further in the sensitivity analysis.

Cost summary

3.4.7 Assuming a 4% reduction in the prescribing of hormone therapy for prostate cancer the annual savings in drug costs would be £5 million, as presented in table 11.

Table 11 Potential savings from reduced prescribing of hormone therapy for prostate cancer.

BNF sub paragraph name	Current expenditure £000s	Proposed change %	Proposed expenditure £000s	Savings £000s
Prostate cancer & gonadorelin analogues	126,375	-4%	121,320	(5,055)
Total saving				(5,055)

Other considerations

3.4.8 Any estimates made about a future change in prescribing are subject to a degree of uncertainty. It is suggested that local users further investigate the potential changes in prescribing following implementation of this recommendation.

3.5 Palliative care

Background

- 3.5.1 Healthcare professionals should ensure that palliative care is available when needed and is not limited to the end of life. It should not be restricted to being associated with hospice care (recommendation 1.7.27).
- 3.5.2 Palliative care covers a number of services including: specialist palliative care inpatient beds, community specialist palliative care teams, hospital support teams, bereavement services, outpatient services, day care and 'hospice at home' services (NICE 2004).
- 3.5.3 There is a lack of evidence to support specified levels of service provision, such as the number of specialist inpatient beds or the level of bereavement support required per million of population (NICE 2004).

Assumptions made

- 3.5.4 Economic modelling was undertaken to estimate the overall cost of providing a full range of supportive and palliative care in England and Wales by NICE in March 2004. The recommendations made in this guideline are in line with previous recommendations made in 2004.
- 3.5.5 The majority of the costs identified in 2004 were the full cost of service provision, rather than the cost impact (incremental cost). This approach was necessary because the baseline service levels could not be established.

[Supportive and palliative care: Economic review](#)

Cost summary

- 3.5.6 As identified by NICE in 2004, improving supportive and palliative care for adults with cancer is likely to have material resource consequences. This report has not attempted to quantify the additional investment required, it is recommended local users consult the financial modelling completed by NICE in 2004.

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 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*

Reduction in the number of biopsies

- 4.2.1 It is assumed that by not using serum PSA level alone to decide on a prostate biopsy, there will be a reduction in the annual number of prostate biopsies undertaken.
- 4.2.2 In the costing report it is estimated that the number of biopsies will be reduced by about 10%. Varying the estimated reduction from between 5 and 15% results in savings ranging from £1.7 to £3.8 million.

Unit cost per fraction

- 4.2.3 The guideline recommends that men undergoing radical external beam radiotherapy for prostate cancer should receive a minimum of 74 Gy to the prostate at no more than 2 Gy per fraction.
- 4.2.4 In costing NICE guidelines we take a commissioning perspective on the costs incurred through implementation. The unit cost per fraction for external beam radiotherapy has been estimated as £135.
- 4.2.5 Varying this unit cost from £98 to £146 per fraction results in savings ranging from £2.3 to £4.4 million. This range in costs was taken from the inter-quartile ranges identified in reference costs.

Reduction in the prescribing of hormone therapy

- 4.2.6 Hormonal therapy is not routinely recommended for men with prostate cancer who have a biochemical relapse unless they have:
- symptomatic local disease progression, or
 - any proven metastases, or
 - PSA doubling time <3 months.
- 4.2.7 It is thought that this recommendation will result in more restrictive prescribing of hormonal therapy for men with prostate cancer.

- 4.2.8 Varying the estimated reduction in the prescribing of hormonal therapies prescribed for prostate cancer from 2 to 6% resulted in savings ranging from £0.2 to £5.3 million.
- 4.2.9 The large range identified for the costing completed for this recommendation indicates that this is an area of uncertainty within the costing model. It is suggested that local users investigate prescribing of hormone therapy at a local level.

5 Impact of guidance for commissioners

- 5.1.1 The costs of prostatectomy, needle biopsy and radiotherapy fractions are in the national tariff or the indicative tariff.
- 5.1.2 Expenditure for prostate cancer will fall into the programme budgeting category 2X cancers and tumours.

6 Conclusion

6.1 *Total national cost for England*

- 6.1.1 Using the significant resource-impact recommendations shown in table 1 and assumptions specified in section 3 we have estimated the annual resource impact of fully implementing the guideline in England to be a saving of £2.8 million. Table 12 shows the breakdown of cost of each significant resource-impact recommendation.

Table 12 Summary of resource impact by recommendation.

Recommendation	Estimated cost/(saving) £000s
Decision whether or not to biopsy	(2,168)
Offering active surveillance	(1,346)
Radical external beam radiotherapy	5,805
Hormonal therapy	(5,055)
Total saving	(2,764)
Access to palliative care	*

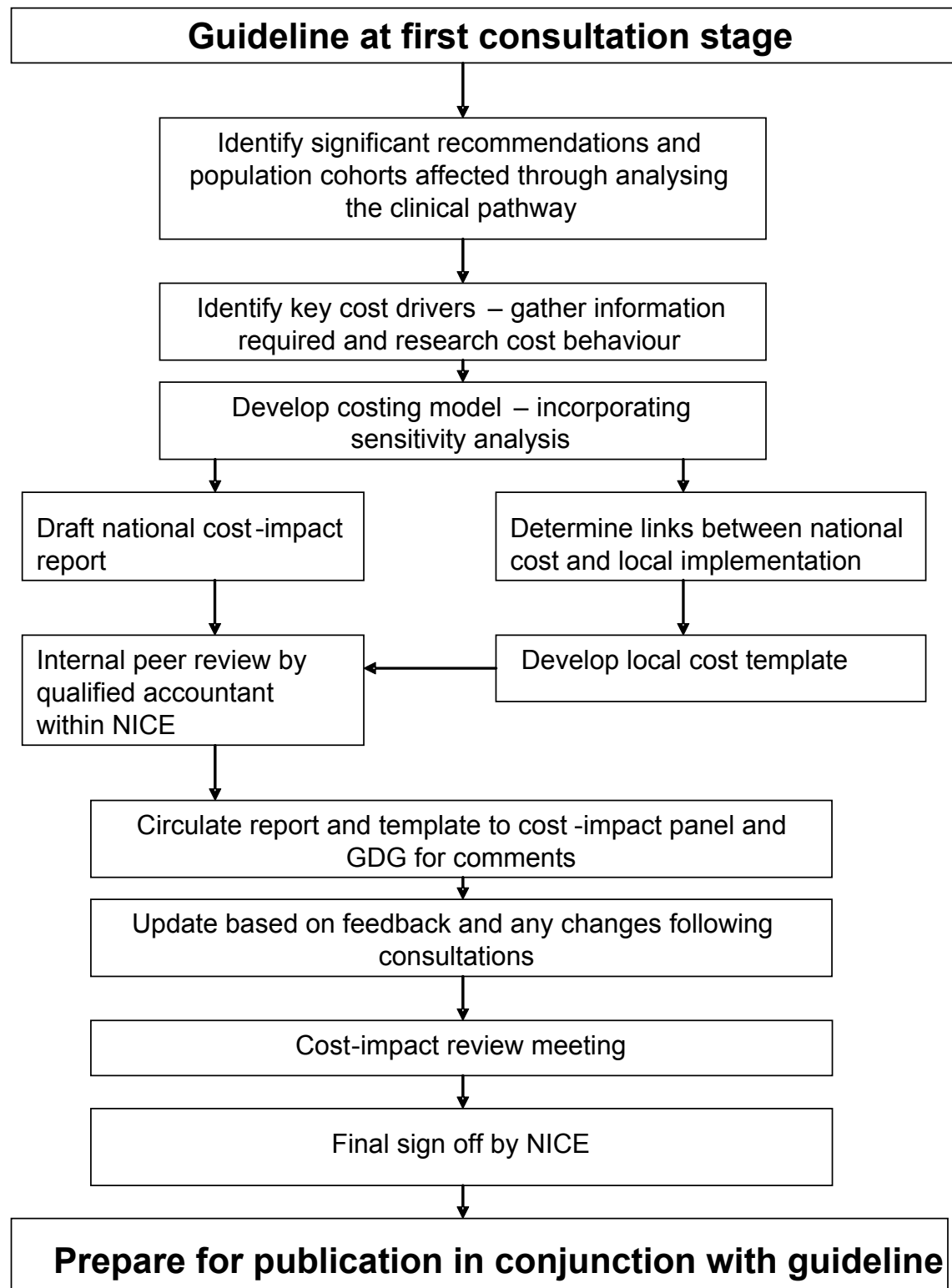
* Likely to have material resource implications but not quantified in this report, see section 3.5 for more information.

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 primary care trusts (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 to achieve savings of £10,000. 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							
Parameter varied	Baseline value	Minimum value	Maximum value	Baseline savings £000s	Minimum savings £000's	Maximum savings £000s	Change £000s
Reduction in the number of biopsies	10.0%	5.0%	15.0%	-2,763	-1,679	-3,847	-2,168
Unit cost per biopsy	£299	£160	£435	-2,763	-1,800	-3,705	-1,905
Reduction in the number of prostatectomies	10.0%	5.0%	15.0%	-2,763	-2,090	-3,435	-1,345
Proposed increase in fractions	43,000	38,700	47,300	-2,763	-2,182	-3,343	-1,161
Unit cost per fraction	£135	£98	£146	-2,763	-2,290	-4,354	-2,064
Reduction in prescribing of hormone therapy	4%	2%	6%	-2,763	-235	-5,290	-5,055

Appendix C. References

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