

Putting NICE guidance into practice

Costing report: Bladder cancer

Implementing the NICE guideline on bladder cancer (NG2)

Published: February 2015

Updated September 2015 to update the unit cost of transurethral resection of bladder tumour (TURBT)

This costing report accompanies [Bladder cancer: diagnosis and management](#) (NICE guideline NG2)

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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.

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Executive summary

This costing report looks at the resource impact of implementing the NICE guideline on [bladder cancer](#) in England.

This guidance will be commissioned by clinical commissioning groups and services will be delivered by secondary and tertiary healthcare providers and GP practices.

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.

Significant¹ 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:

- Offer white-light-guided transurethral resection of bladder tumour (TURBT) with one of photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test (such as UroVysion using fluorescence in-situ hybridization [FISH], ImmunoCyt or a nuclear matrix protein 22 [NMP22] test) to people with suspected bladder cancer. This should be carried out or supervised by a urologist experienced in TURBT. **[recommendation 1.2.3]**
- Offer people with suspected bladder cancer a single dose of intravesical mitomycin C given at the same time as the first TURBT. **[recommendation 1.2.7]**

¹ 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 1, particularly if it is a disease that runs in families and there is a cluster in 1 area)
- where initial costing work indicates that the national cost is more than £1 million (equivalent to £2000 per 100,000 population).

- Offer people with low-risk non-muscle-invasive bladder cancer cystoscopic follow-up 3 months and 12 months after diagnosis.

[recommendation 1.4.3]

Net resource impact

The annual change in resource use arising from implementing the recommendations considered in the costing analysis is summarised below and will lead to significant savings for the NHS.

Costs for population of England per annum

| Recommendation | Recommendation number | £000s |
|---|------------------------------|---------------|
| Offer white-light-guided TURBT with one of photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test (such as UroVysion using fluorescence in-situ hybridization [FISH], ImmunoCyt or a nuclear matrix protein 22 [NMP22] test) to people with suspected bladder cancer. This should be carried out or supervised by a urologist experienced in TURBT | 1.2.3 | 56 |
| Offer people with suspected bladder cancer a single dose of intravesical mitomycin C given at the same time as the first TURBT | 1.2.7 | 26 |
| Offer people with low-risk non-muscle-invasive bladder cancer cystoscopic follow-up 3 months and 12 months after diagnosis | 1.4.3 | -6,187 |
| Savings for the national population (-) | | -6,105 |

Costs

Increased costs could be incurred if more people having a white-light-guided TURBT also receive one of photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test.

Increased drug costs could be incurred if people with suspected low- or intermediate-risk non-muscle-invasive bladder cancer receive a single dose of intravesical mitomycin C given at the same time as TURBT.

Benefits and savings

Implementing the clinical guideline may result in the following savings and benefits, some of these are in addition to the savings costed in this tool:

- Reducing the number of follow-up appointments for people with low-risk non-muscle-invasive bladder cancer in secondary care could lead to savings of around £6.1 million nationally.
- Performing white-light-guided TURBT along with one of photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test could lead to more accurate diagnosis and a reduction of recurrences and residual tumours.
- Giving a single dose of intravesical mitomycin C at the same time as the TURBT could lead to savings from reduced progression (and the further treatments that progression may entail).
- Offering people with bladder cancer an informed choice of intravesical BCG (Bacille Calmette-Guérin) treatment or radical cystectomy could lead to savings from reduced treatment of advanced disease because of an improved cure rate.
- Increasing the number of people who are given adjuvant cisplatin combination chemotherapy after radical cystectomy, for whom neoadjuvant chemotherapy was not suitable, could reduce costs of best supportive care and palliative care because it could lead to a higher cure rate.

Local costing template

The costing template produced to support the 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 the template showed that savings of around £11,500 could be made for a population of 100,000.

1 Introduction

1.1 *Supporting implementation*

1.1.1 The NICE clinical guideline on [bladder cancer](#) is supported by the following implementation tools:

- [costing tools](#)
 - a costing report; this document
 - a local costing template; a spreadsheet that can be used to estimate the local cost of implementation
- [baseline assessment tool](#); assess your baseline against the recommendations in the guidance in order to prioritise implementation activity, including clinical audit
- [clinical audit tool](#); measure current practice against the guidance and identify areas in which practice can be improved

1.2 *What is the aim of this report?*

1.2.1 This report provides estimates of the cost impact arising from implementation of the guidance on [bladder 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 NICE guidance.

1.2.3 This report does not reproduce the NICE guideline on bladder cancer and should be read in conjunction with it.

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.

1.3 *Epidemiology of bladder cancer*

- 1.3.1 Bladder cancer is the seventh most common cancer in the UK, with just over 10,000 cases diagnosed each year (Cancer Research UK 2013a). These are unevenly split between men (fourth most common cancer) and women (11th most common cancer).
- 1.3.2 Around 5,000 people each year die from bladder cancer in the UK, making it the seventh most common cause of cancer death (Cancer Research UK 2013b). As with new diagnoses, these deaths are unevenly split between men (sixth most common cancer death) and women (12th most common cancer death).
- 1.3.3 There are a number of well-known risk factors for bladder cancer, with the main risk being increasing age. Smoking is also a key risk factor and the chance of developing bladder cancer is about 3 times higher in people who smoke (Parkin 2011a). There are also certain industrial chemicals linked to bladder cancer. These chemicals are now controlled, but it is estimated that they account for about 7% of bladder cancers in men and 2% in women (Parkin 2011b).

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 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 bladder cancer.

2.2.2 The guidance does not cover:

- Adults with bladder sarcoma.
- Children (younger than 18 years).
- Adults with urothelial carcinoma of the ureter and renal pelvis.
- Adults with secondary cancers of the bladder or urethra (for example, colorectal cancer or cervical cancer invading the bladder).
- Referral from primary care with suspected bladder cancer, including haematuria (this is covered by the NICE guideline on [suspected cancer](#) [published June 2015]).
- Vinflunine for the treatment of advanced or metastatic transitional cell carcinoma of the urothelial tract (this is the subject of an ongoing NICE technology appraisal).

Therefore, these issues are outside the scope of the costing work.

2.2.3 We worked with the Guideline Development Group 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

| Recommendation | Recommendation number | Guideline key priority? |
|---|------------------------------|--------------------------------|
| Offer white-light-guided transurethral resection of bladder tumour (TURBT) with one of photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test (such as UroVysion using fluorescence in-situ hybridization [FISH], ImmunoCyt or a nuclear matrix protein 22 [NMP22] test) to people with suspected bladder cancer. This should be carried out or supervised by a urologist experienced in TURBT | 1.2.3 | ✓ |
| Offer people with suspected bladder cancer a single dose of intravesical mitomycin C given at the same time as the first TURBT | 1.2.7 | ✓ |
| Offer people with low-risk non-muscle-invasive bladder cancer cystoscopic follow-up 3 months and 12 months after diagnosis | 1.4.3 | x |

2.2.4 Ten of the recommendations in the guideline have been identified as key priorities for implementation, and 2 of these are among the 3 recommendations considered to have significant resource impact.

Recommendations identified as key priorities for implementation that have not been costed

2.2.5 Recommendation 1.1.4 is to use a holistic needs assessment to identify an individualised package of information and support for people with bladder cancer. It is not expected that this recommendation will lead to an increase in staff or a significant impact on resources and therefore the cost impact of implementing this will be low.

2.2.6 Recommendation 1.2.2 is to consider CT or MRI staging before transurethral resection of bladder tumour (TURBT) if muscle-invasive bladder cancer is suspected at cystoscopy. This is not expected to lead to a significant cost impact because it is thought to

be current practice in the majority of cases. However, the cost will be brought forward in the diagnosis pathway as currently most CT or MRI staging happens after a TURBT.

- 2.2.7 Recommendation 1.3.1 is to ensure that people with non-muscle-invasive bladder cancer have a number of details recorded, including recurrence history and size and number of cancers, and that these are used to guide discussions about prognosis and treatment options. It is not expected that this recommendation will lead to an increase in staff or a significant impact on resources because current staff levels are sufficient to carry out this work.
- 2.2.8 Recommendation 1.3.6 is to offer the choice of intravesical BCG (Bacille Calmette-Guérin) treatment or radical cystectomy to people with high-risk non-muscle-invasive bladder cancer. This is thought to be current practice in the majority of cases and is therefore not expected to lead to a significant cost impact.
- 2.2.9 Recommendation 1.4.5 is to discharge to primary care people who have had low-risk non-muscle-invasive bladder cancer and who have no recurrence of the bladder cancer within 12 months. Implementing this recommendation is not expected to result in any change in the number of primary care clinicians needed and therefore it will not have a significant resource impact.
- 2.2.10 Recommendation 1.4.7 is to offer people with intermediate-risk non-muscle-invasive bladder cancer cystoscopic follow-up at 3, 9 and 18 months, and once a year thereafter. This thought to be current practice in most cases so is not expected to lead to a significant cost impact.
- 2.2.11 Recommendation 1.5.2 is to offer neoadjuvant chemotherapy using a cisplatin combination regimen before radical cystectomy or radical radiotherapy to people with newly diagnosed muscle-invasive urothelial bladder cancer for whom cisplatin-based chemotherapy is suitable. It is not expected that this

recommendation will lead to a large enough increase in the population being treated to increase costs significantly.

2.2.12 Recommendation 1.5.3 is to offer a choice of radical cystectomy or radiotherapy with a radiosensitiser to people with muscle-invasive urothelial bladder cancer for whom radical therapy is suitable. It is not expected that this recommendation will lead to a large enough increase in the population being treated to increase costs significantly.

2.2.13 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.

2.3 *General assumptions made*

2.3.1 The model is based on annual incidence and population estimates of people who have bladder cancer. The annual incidence figures were taken from Cancer Research UK and are not expected to change significantly as a result of the guidance. However, it is assumed that the proportion of people who receive each type of treatment could change.

2.3.2 The proportion of people who receive white-light-guided TURBT along with one of photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test is expected to increase from 65% to 100% following implementation of the guideline.

2.3.3 The proportion of people given a single dose of intravesical mitomycin C at the same time as TURBT is expected to increase from 75% to 80% following implementation of the guideline.

2.3.4 The proportion of people with low-risk non-muscle-invasive bladder cancer who are offered follow-up 3 months and 12 months after

diagnosis instead of 3 months, 9 months, 12 months and then every 12 months up to year 5 after diagnosis is expected to increase from 0% to 100% following implementation of the guideline.

2.4 *Basis of unit costs*

- 2.4.1 If a national tariff price or indicative price exists for an activity this has been used as the unit cost.
- 2.4.2 Using these prices ensures that the costs in the report are the cost to the clinical commissioning group of commissioning predicted changes in activity at the tariff price, but may not represent the actual cost to individual trusts of delivering the activity.

3 Significant resource-impact recommendations

3.1 *Offer white-light-guided TURBT with one of photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test to people with suspected bladder cancer. This should be carried out or supervised by a urologist experienced in TURBT*

Background

- 3.1.1 This recommendation aims to ensure that people having white-light-guided transurethral resection of bladder tumour (TURBT) also have another form of investigation to improve the accuracy of bladder cancer diagnosis. This may lead to fewer recurrences of bladder cancer and therefore fewer follow-up TURBTs.

Assumptions made

- 3.1.2 It has been estimated that the incidence of TURBT in the national population is 0.033% (6,797) for males 18 years and over and 0.012% (2,582) for females 18 years and over. Expert clinical opinion estimates that 95% of people having a TURBT will go on to

be diagnosed with bladder cancer. The proportions of people having TURBT were calculated by working backwards from the number of people diagnosed with bladder cancer each year.

- 3.1.3 According to expert clinical opinion, 5% of people having a TURBT are assumed to use photodynamic diagnosis, 5% use narrow-band imaging, 50% use cytology and 5% use a urinary biomarker test along with TURBT. The remaining 35% are assumed to use TURBT alone.
- 3.1.4 After the implementation of this recommendation it is assumed these proportions will change to 5% of people having photodynamic diagnosis, 5% using narrow-band imaging, 85% using cytology and 5% using a urinary biomarker test along with TURBT. None are assumed to use TURBT alone.
- 3.1.5 Using the national tariff 2014–15, the cost of a white-light-guided TURBT is £1,402. This is the day-case tariff for Healthcare Resource Group (HRG) LB13B Bladder Major Endoscopic Procedure without CC.
- 3.1.6 The cost of £1,199 for photodynamic diagnosis was taken from [‘The cost impact of implementing photodynamic diagnosis of non-muscle invasive bladder cancer in England’](#).
- 3.1.7 Narrow-band imaging is not expected to have any additional cost on top of TURBT as it is available as a feature in the latest equipment used during the TURBT procedure, when acute trusts upgrade their equipment narrow band imaging will be available for them to use.
- 3.1.8 The cytology cost of £17 was taken from NHS reference costs 2012–13, DAPS01 – Cytology. The cost of a urinary biomarker test of £185.10 was taken from the [full guideline](#) on bladder cancer.

Cost summary

3.1.9 Increasing the number of people who receive white-light-guided TURBT with either photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test could lead to a cost impact of around £55,500 for England. The net cost is summarised in table 2. Although this cost impact is not significant at a national level, costs could vary widely depending on which secondary diagnostic technique is adopted. Commissioners can use the costing template to quantify these at a local level depending on the equipment and expertise available in their area.

Table 2 Changes in the population having white-light-guided transurethral resection of bladder tumour (TURBT) with either photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test

| | Unit cost | Current | | Proposed | | Change | |
|---|-----------|-------------------|---------------|-------------------|---------------|-------------------|--------------|
| | | Numbers of people | Cost (£000) | Numbers of people | Cost (£000s) | Numbers of people | Cost (£000s) |
| Number of people who receive white-light-guided TURBT alone | £1,402 | 3,283 | 4,602 | 0 | 0 | -3,283 | -4,602 |
| Number of people who receive white-light-guided TURBT with photodynamic diagnosis | £2,601 | 469 | 1,220 | 469 | 1,220 | 0 | 0 |
| Number of people who receive white-light-guided TURBT with narrow-band imaging | £1,402 | 469 | 657 | 469 | 657 | 0 | 0 |
| Number of people who receive white-light-guided TURBT with cytology | £1,419 | 4,689 | 6,654 | 7,972 | 11,312 | 3,283 | 4,658 |
| Number of people who receive white-light-guided TURBT with a urinary biomarker test | £1,587 | 469 | 744 | 469 | 744 | 0 | 0 |
| Total | | | 13,878 | | 13,933 | | 56 |

Other considerations

3.1.10 The Guideline Development Group considered that there may be an additional cost impact because acute trusts may need to invest in new equipment for procedures such as photodynamic diagnosis

and narrow-band imaging. There may also be costs for training staff to use the new equipment.

3.2 Offer people with suspected bladder cancer a single dose of intravesical mitomycin C given at the same time as the first TURBT

Background

3.2.1 The recommendation that intravesical mitomycin C should be given at the same time as the first TURBT (in theatre) was based partly on the Guideline Development Group's experience. They considered intravesical mitomycin C given at the time of the first TURBT to be more convenient for clinicians and patients. It also ensures that patients receive the full benefit of this time-dependent treatment.

Assumptions made

3.2.2 The proportion of people given a single dose of intravesical mitomycin C at the same time as TURBT was taken from expert clinical opinion.

3.2.3 Expert clinical opinion reports that currently 75% (4,811) of people with low- and intermediate-risk non-muscle-invasive bladder cancer have a single dose of intravesical mitomycin C at the same time as first TURBT.

3.2.4 Expert clinical opinion expects this to increase to 80% (5,132) of people receiving a TURBT as a result of implementing this recommendation, as this treatment may not be suitable for everyone within this group.

3.2.5 The cost of delivering a single 40-mg vial dose of intravesical mitomycin C in theatre is estimated to be £80. This cost was taken from the [Chemist and Druggist website](#) [accessed 12 February 2015].

3.2.6 There are not expected to be any additional costs of delivering the dose because it is assumed that it will be done by a surgeon during the TURBT.

Cost summary

3.2.7 Increasing the number of people who receive a single dose of intravesical mitomycin C at the same time as the first TURBT is expected to lead to a cost impact of around £25,600 for England. The net cost is summarised in table 3. Although this cost impact is not significant at a national level, the Guideline Development Group wanted to highlight this important issue and any potential cost impact in this costing report.

Table 3 Changes in the population given a single dose of mitomycin C at the same time as transurethral resection of bladder tumour (TURBT)

| | Unit cost | Current | | Proposed | | Change | |
|---|-----------|-------------------|-------------|-------------------|--------------|-------------------|--------------|
| | | Numbers of people | Cost (£000) | Numbers of people | Cost (£000s) | Numbers of people | Cost (£000s) |
| Number of people given a single dose of mitomycin C at the same time as a TURBT | £80 | 4,811 | 384 | 5,132 | 410 | 321 | 26 |
| Total | | | 384 | | 461 | | 26 |

Other considerations

3.2.8 The Guideline Development Group noted that there may be some additional staff training required to administer intravesical mitomycin C at the same time as the first TURBT.

3.3 Offer people with low-risk non-muscle-invasive bladder cancer cystoscopic follow-up 3 months and 12 months after diagnosis

Background

3.3.1 Implementing this recommendation is anticipated to lead to a reduction in the number of cystoscopic follow-up appointments in secondary care for people with low-risk non-muscle-invasive bladder cancer.

Assumptions made

3.3.2 In England in 2012, bladder cancer was diagnosed 6,457 males and 2,453 females. ([Bladder cancer: diagnosis and management, Needs Assessment](#)).

3.3.3 The proportion of people who have non-invasive muscle cancer is estimated to be between 75–85% ([Bladder cancer: diagnosis and management, Needs Assessment](#)). The costing template uses a midpoint of 80% (7,128).

3.3.4 The population with non-muscle-invasive bladder cancer is split into 3 risk grades: 70% are assumed to be in the low-risk grade, 20% in the intermediate-risk grade and 10% in the high-risk grade (Hendricksen and Witjes 2007). This equates to 4,990, 1,430 and 710 people respectively for the population of England.

3.3.5 It has been assumed that after diagnosis 100% of people with low-risk non-muscle-invasive bladder cancer currently receive follow-up at 3 months, 6 months, 12 months and then every 12 months up to year 5.

3.3.6 After implementing the recommendation in section 3.3 above, it has been estimated that 100% of people with non-muscle-invasive low-risk bladder cancer will receive follow-up 3 months and 12 months

after diagnosis and will then be discharged to primary care if there is no recurrence.

3.3.7 Using the national tariff 2014–15, the cost of a follow-up procedure for a person with low-risk non-muscle-invasive bladder cancer would be £248. This is the day-case tariff for Healthcare Resource Group (HRG) LB14E – Bladder Intermediate Endoscopic Procedure 19 years and over.

3.3.8 The model uses the following methodology to calculate the savings from a reduction in secondary care follow-up appointments for people with low-risk non-muscle-invasive bladder cancer.

- In current practice the number of follow up appointments for people with low-risk non-muscle invasive bladder cancer is 34,960, this is based on an annual incident population of 4,990. The current year incident population would have 3 appointments equating to 14,970 and the prior 4 years incident populations would have 1 appointment each, which totals 19,960.
- In future practice this is expected to reduce to 2 follow-up appointments both in year one and only for that years incident population. This equates to 9,980 appointments nationally.
- This is equivalent to the annual incident population of 4,990 people having 7 appointments each per year in current practice and 2 appointments per year in future practice.

Cost summary

3.3.9 Reducing the number of follow-up appointments for people with low-risk non-muscle-invasive bladder cancer is expected to lead to a cost saving of £6.2 million for England. The net cost is summarised in table 4.

Table 4 Changes in the number of follow-up appointments for people with non-muscle-invasive low-risk bladder cancer

| | Unit cost | Current | | Proposed | | Change | |
|---|-----------|-------------------|--------------|-------------------|--------------|-------------------|---------------|
| | | Numbers of people | Cost (£000) | Numbers of people | Cost (£000s) | Numbers of people | Cost (£000s) |
| Number of people with low-risk non-muscle-invasive bladder cancer who are offered follow-up 3 months, 12 months and then every 12 months up to year 5 after diagnosis | £1,736 | 4,990 | 8,662 | 0 | 0 | -4,990 | -8,662 |
| Number of people with low-risk non-muscle-invasive bladder cancer who are offered follow-up 3 months and 12 months after diagnosis | £496 | 0 | 0 | 4,990 | 2,475 | 4,990 | 2,475 |
| Total | | 4,990 | 8,662 | 4,990 | 2,475 | 0 | -6,187 |

Other considerations

3.3.10 Recommendation 1.4.5 states people with low-risk non-muscle-invasive bladder cancer who have no recurrence within 12 months can be discharged to primary care, which could lead to an increase in follow-up appointments given by GPs.

3.4 Costs over time

3.4.1 Table 5 below shows the savings, relating to recommendation 1.4.3 which states to offer people with low-risk non-muscle-invasive bladder cancer cystoscopic follow-up 3 months and 12 months after diagnosis, over the next 6 years based on the incident population of England.

3.4.2 It has been estimated that there will be a fall in the number of follow-up appointments for people with low-risk non-muscle invasive bladder cancer over the next 6 years. It will reduce by 1

appointment per person in the incident population over the next 5 years.

3.4.3 From year 5 onwards a steady state will be reached and savings are anticipated to continue annually at this level.

Table 5: Costs over time for recommendation 1.4.3 for the next 6 years for the national population

| Savings over time (£) | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Year 1 incident population | - 1,237,421 | - 1,237,421 | - 1,237,421 | - 1,237,421 | - 1,237,421 | - |
| Year 2 incident population | - | - 1,237,421 | - 1,237,421 | - 1,237,421 | - 1,237,421 | - 1,237,421 |
| Year 3 incident population | - | - | - 1,237,421 | - 1,237,421 | - 1,237,421 | - 1,237,421 |
| Year 4 incident population | - | - | - | - 1,237,421 | - 1,237,421 | - 1,237,421 |
| Year 5 incident population | - | - | - | - | - 1,237,421 | - 1,237,421 |
| Year 6 incident population | - | - | - | - | - | - 1,237,421 |
| Total | - 1,237,421 | - 2,474,842 | - 3,712,262 | - 4,949,683 | - 6,187,104 | - 6,187,104 |

3.5 Benefits and savings

- Reducing the number of follow-up appointments for people with low-risk non-muscle-invasive bladder cancer in secondary care could lead to savings of around £6.2 million nationally.
- Giving white-light-guided TURBT along with one of photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test could lead to more accurate diagnosis and a reduction of recurrences of bladder cancer and residual tumours.
- Giving a single dose of intravesical mitomycin C at the same time as TURBT could lead to savings from reduced progression (and the further treatments that progression would entail).
- Offering people an informed choice of intravesical BCG (Bacille Calmette-Guérin) treatment or radical cystectomy could lead to savings from reduced treatment of advanced disease because of an improved cure rate.

- Increasing the number of people given adjuvant cisplatin combination chemotherapy after radical cystectomy for whom neoadjuvant chemotherapy was not suitable could reduce costs of best supportive care and palliative care because it could lead to a higher cure rate.

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

Proportion of people with non-muscle-invasive bladder cancer

- 4.2.1 The sensitivity analysis explores the effect of a 16% variance in the proportion of people diagnosed with non-muscle-invasive bladder cancer each year. The results show that savings would increase by £1.2 million if this proportion increased from 72% to 88% for the national population.

Future proportion of people receiving photodynamic diagnosis instead of cytology

4.2.2 The sensitivity analysis explores the effect of a 15% variance in the future proportion of people having a TURBT and receiving photodynamic diagnosis at the same time. The results show that costs would increase by £1.5 million if this proportion increased from 5% to 20% for the national population.

5 Impact of guidance for commissioners

5.1.1 This guidance could lead to savings for clinical commissioning groups through a reduction in cystoscopy follow-up appointments for people with low-risk non-muscle-invasive bladder cancer.

5.1.2 The costs associated with treating bladder cancer are likely to come under programme budgeting category 2H – Cancer and tumours – urological.

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 impact of implementing these recommendations in England to be a saving of £6.1 million. Table 6 shows the breakdown of cost of each significant resource-impact recommendation.

Table 6 Cost of each significant resource-impact recommendation for the population of England

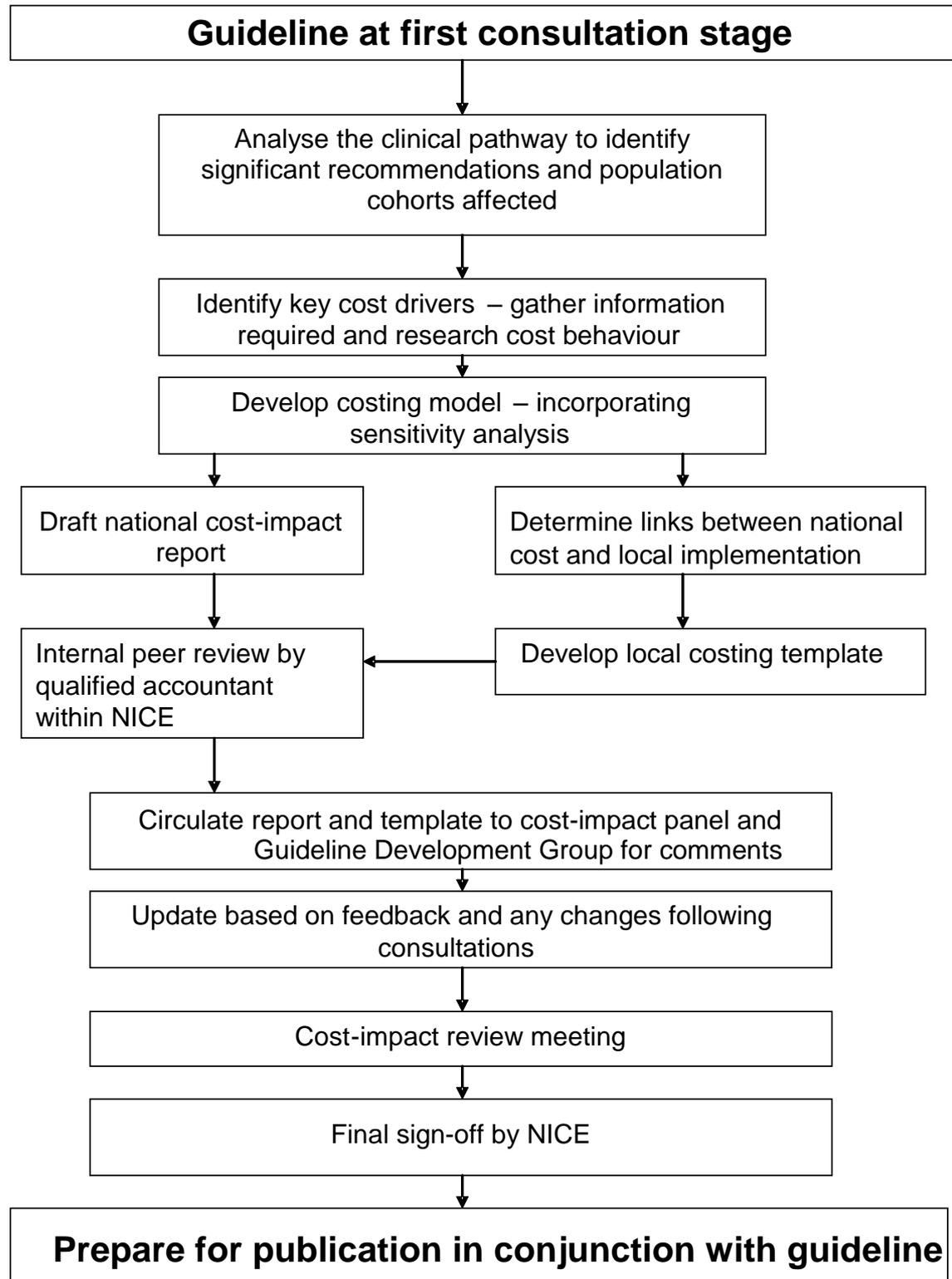
| Recommendation | Recommendation number | £000s |
|---|------------------------------|---------------|
| Offer white-light-guided transurethral resection of bladder tumour (TURBT) with one of photodynamic diagnosis, narrow-band imaging, cytology or a urinary biomarker test (such as UroVysion using fluorescence in-situ hybridization [FISH], ImmunoCyt or a nuclear matrix protein 22 [NMP22] test) to people with suspected bladder cancer. This should be carried out or supervised by a urologist experienced in TURBT | 1.2.3 | 56 |
| Offer people with suspected bladder cancer a single dose of intravesical mitomycin C given at the same time as the first TURBT | 1.2.7 | 26 |
| Offer people with low-risk non-muscle-invasive bladder cancer cystoscopic follow-up 3 months and 12 months after diagnosis | 1.4.3 | -6,187 |
| Total cost/saving (-) | | -6,105 |

6.1.2 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 CCGs 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 save about £11,500. 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

| Individual variable sensitivity | | | | Recurrent costs | | | Change (£000s) |
|--|----------------|---------------|---------------|------------------------|-----------------------|-----------------------|----------------|
| | Baseline value | Minimum value | Maximum value | Baseline costs (£000s) | Minimum costs (£000s) | Maximum costs (£000s) | |
| Number of people with suspected bladder cancer having a TURBT | 0.022% | 0.02% | 0.02% | -6,106 | -6,111 | -6,100 | 11 |
| Proportion of patients with non-muscle-invasive bladder cancer | 80.0% | 72.0% | 88.0% | -6,106 | -5,490 | -6,722 | -1,232 |
| Future proportion of low-risk non-muscle-invasive bladder cancer patients who are offered follow-up 3 months and 12 months after diagnosis | 100.0 | 90.0 | 100.0 | -6,106 | -5,487 | -6,106 | -619 |
| Future proportion of people receiving photodynamic diagnosis instead of cytology | 5.0% | 5.0% | 20.0% | -6,106 | -6,106 | -4,559 | 1,547 |
| Future proportion of people receiving narrow band imaging instead of cytology | 5.0% | 5.0% | 15.0% | -6,106 | -6,106 | -6,122 | -16 |
| Cost of a transurethral resection of bladder tumour (TURBT) | £1,402 | £1,262 | £1,542 | -6,106 | -6,106 | -6,106 | 0 |

Appendix C. References

[Bladder cancer: diagnosis and management, Needs Assessment - full report, National Collaborating Centre for Cancer](#)

Cancer Research UK (2013a) [Bladder cancer incidence statistics](#)

Cancer Research UK (2013b) [Bladder cancer mortality statistics](#)

Hendricksen K, Witjes J A (2007) Treatment of intermediate-risk non-muscle-invasive bladder cancer (NMIBC). *European Urology Supplements* 6: 800–8

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Parkin D (2011b) Cancers attributable to occupational exposures in the UK in 2010. *British Journal of Cancer* 105: S70–2