

Low back pain

Costing report
Implementing NICE guidance

May 2009

NICE clinical guideline 88



This costing report accompanies the clinical guideline: 'Low back pain: early management of persistent non-specific low back pain' (available online at www.nice.org.uk/CG88).

Issue date: May 2009

This guidance 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 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.....	5
<i>Supporting implementation.....</i>	<i>5</i>
<i>Significant resource-impact recommendations.....</i>	<i>5</i>
<i>Total cost impact</i>	<i>6</i>
<i>Benefits and savings not quantified above</i>	<i>7</i>
<i>Local costing template.....</i>	<i>7</i>
1 Introduction.....	8
1.1 <i>Supporting implementation</i>	<i>8</i>
1.2 <i>What is the aim of this report?</i>	<i>8</i>
1.3 <i>Epidemiology of low back pain.....</i>	<i>9</i>
1.4 <i>Models of care</i>	<i>12</i>
2 Costing methodology.....	12
2.1 <i>Process.....</i>	<i>12</i>
2.2 <i>Scope of the cost-impact analysis.....</i>	<i>13</i>
2.3 <i>General assumptions made</i>	<i>16</i>
2.4 <i>Basis of unit costs.....</i>	<i>16</i>
3 Cost of significant resource-impact recommendations	18
3.1 <i>Structured exercise programmes.....</i>	<i>18</i>
3.2 <i>Acupuncture.....</i>	<i>20</i>
3.3 <i>Manual therapy</i>	<i>23</i>
3.4 <i>Combined physical and psychological treatment programmes ...</i>	<i>25</i>
3.5 <i>Injections of therapeutic substances into the back.....</i>	<i>27</i>
3.6 <i>MRI scans.....</i>	<i>29</i>
3.7 <i>X-rays</i>	<i>29</i>
3.8 <i>Radiofrequency facet joint denervation.....</i>	<i>30</i>
3.9 <i>Other physical therapies</i>	<i>31</i>
3.10 <i>Other benefits and savings</i>	<i>33</i>
4 Sensitivity analysis	33
4.1 <i>Methodology</i>	<i>33</i>
4.2 <i>Impact of sensitivity analysis on costs</i>	<i>34</i>
5 Impact of guidance for commissioners	34
6 Conclusion.....	35

6.1	<i>Total national cost for England</i>	35
6.2	<i>Next steps</i>	36
	Appendix A. Approach to costing guidelines.....	38
	Appendix B. Results of sensitivity analysis ^a	39
	Appendix C: Hospital Episode Statistic Codes.....	40
	<i>Injections into the base of the spine</i>	40
	<i>Radiofrequency facet joint denervation</i>	41

Executive summary

This costing report looks at the resource impact of implementing the NICE guideline 'Low back pain: early management of persistent non-specific low back pain' 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 low back pain is supported by a range of implementation tools available on our website www.nice.org.uk/CG88 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.

The recommendations relating to increased use of the following are likely to require the most additional resources to implement:

- structured exercise programmes
- acupuncture
- manual therapy
- combined physical and psychological treatment programmes.

The recommendations relating to reduced use of the following are most likely to generate cost savings:

- injections of therapeutic substances into the back
- MRI scans
- X-rays
- radiofrequency facet joint denervation.

The guideline will also generate cost savings in other areas. However, it is not possible to accurately predict these savings.

Total cost impact

The annual changes in revenue costs arising from fully implementing the guideline are summarised in table 1.

Table 1 Total cost impact^a

^a Red text denotes negative numbers and therefore a saving.

	National population
Area costed	Standard assumptions (£000s)
Exercise therapy	863
Acupuncture	24,366
Manual therapy	15,959
Combined group physical and psychological treatment programme	10,430
Total cost increases	51,617
Combined individual physical and psychological treatment programme	-396
Reduction in injections into the base of the spine	-33,634
Reduction in MRIs carried out	-11,821
Reduction in physical therapies	-1,769
Reduction in x rays	-1,381
Reduction in use of Denervation	-2,538
Total cost savings	-51,540
Total cost impact	77

Benefits and savings not quantified above

Potential clinical benefits from the implementation of the clinical guideline include reduced intensity of low back pain and a reduction in psychological distress. Both of these have the potential to translate into benefits that will have a quantifiable financial aspect. Examples of such benefits include:

- reduced sickness absence from paid work
- a reduction in the length of time for which people are unable to carry out normal activities
- increased efficiency of physical therapies (see section 3.9).

Treating all types of back pain costs the NHS more than £1000 million per year. In 1998, the direct healthcare costs of all back pain in the UK were estimated at £1623 million – approximately 35% of these costs were related to services provided by the private sector. It is estimated that the costs of care for low back pain exceed £500 million per year in the private sector, with the NHS incurring costs of over £1000 million. Lost production as a result of low back pain costs at least £3500 million per year (Maniadakis and Gray 2000). A reduction in the number of people with low back pain will result in cost savings (e.g. reduction in volume of spinal surgeries); however, it is not possible to accurately quantify the size of these savings. An example of this could be a reduction in the volume of spinal surgeries that are carried out to treat back pain. It is hoped that this will benefit the NHS by saving the direct costs of surgery and by reducing the workload on spinal surgeons.

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 costs of approximately £150 may be incurred for a population of 100,000.

1 Introduction

1.1 *Supporting implementation*

1.1.1 The NICE clinical guideline on low back pain is supported by the following implementation tools available on our website www.nice.org.uk/CG88:

- 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
- a patient information leaflet
- a factsheet for commissioners
- 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 low back pain in England. These estimates are based on assumptions made about current practice and predictions of how current practice might change following implementation.

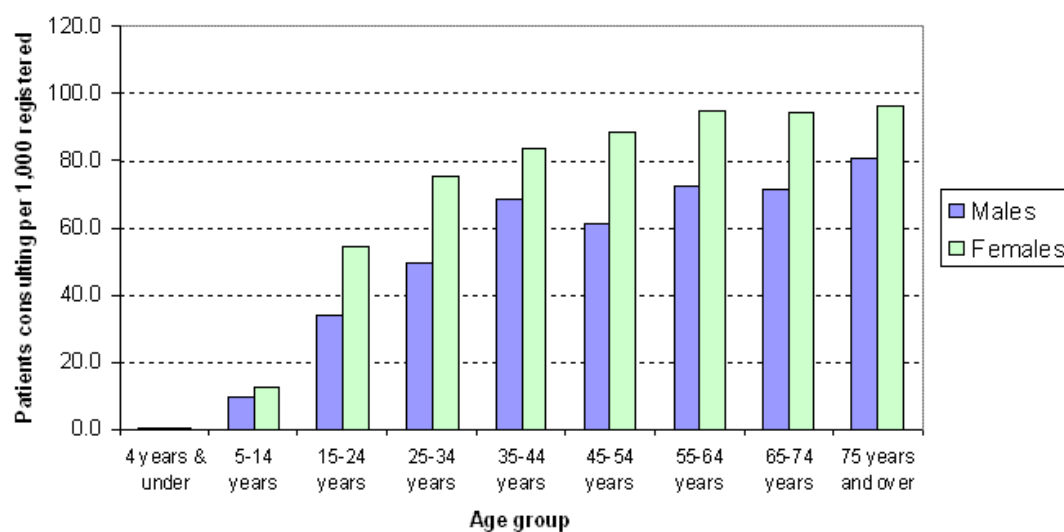
1.2.2 This report aims to help organisations plan for the financial implications of implementing NICE guidance.

- 1.2.3 This report does not reproduce the NICE clinical guideline on low back pain and should be read in conjunction with it (see www.nice.org.uk/CG88).
- 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 low back pain*

- 1.3.1 Low back pain is a common condition that may affect up to 80% of the UK population over the course of their lifetime. In the majority of people this pain is short-lived; however, a small proportion will develop chronic pain and disability. Information collected on consultation rates in Scotland (Practice Team Information 2003–2007) indicates that the volume of back pain consultations increases with patient age, and that back pain tends to be more common in women (Croft et al. 1998).
- 1.3.2 The annual number of patients in various age groups consulting in primary care in Scotland because of back pain can be seen in Figure 1.

Figure 1 Back pain consultations by age



Population source: Community Health Index (CHI) record for Scotland, as at 30 September 2007

- 1.3.3 These figures include people consulting for all types of back pain; however, we have made an adjustment for this in our costing calculations.
- 1.3.4 At present no reliable and valid classification system exists for most cases of non-specific low back pain. In clinical practice as well as in the literature, non-specific low back pain is usually classified by the duration of the complaints.
- 1.3.5 No reliable information exists on the incidence of low back pain lasting between 6 weeks and 12 months. To produce the costing tools, we have taken existing information on the volume of consultations in Scotland and extrapolated this to predict patient numbers in England. We have then amended these figures using a number of assumptions in order to estimate patient numbers.
- 1.3.6 Table 2 shows the percentage of people annually who consult a doctor for the treatment of back pain. In the absence of full and complete information on current patient consulting behaviour in England, we are using this information as a proxy.

1.3.7 We have assumed that each person will attend an average of 1.66 consultations (Maniadakis and Gray 2000), and that half of these consultations are for the treatment of back pain other than low back pain. Of the remainder, we have assumed that 60% of people will get better within 6 weeks of the pain starting. This assumption has been included to ensure that the number of patients who are affected by this guideline is not overestimated.

Table 2 Estimated annual incidence of low back pain lasting more than 6 weeks but less than 52 weeks (based on volume of consultations)

Patient group	Total population	Incidence	Affected population
Males aged 18–24 years	2,355,071	0.40%	9,364
Males aged 25–34 years	3,290,908	0.66%	21,577
Males aged 35–44 years	3,827,403	0.84%	32,169
Males aged 45–54 years	3,217,360	0.81%	26,010
Males aged 55–64 years	2,925,946	0.91%	26,587
Males aged 65–74 years	1,979,861	0.87%	17,241
Males aged 75 years and over	1,513,284	1.05%	15,931
Females aged 18–24 years	2,286,964	0.67%	15,215
Females aged 25–34 years	3,344,734	0.89%	29,861
Females aged 35–44 years	3,912,563	1.02%	40,078
Females aged 45–54 years	3,284,338	1.12%	36,800
Females aged 55–64 years	3,028,146	1.14%	34,623
Females aged 65–74	2,190,080	1.18%	25,811
Females aged 75 years and over	2,400,499	1.18%	28,372
Total	39,557,157	0.91%	359,641

Population source: Community Health Index (CHI) record for Scotland, as at 30 September 2007

1.3.8 As mentioned in 1.3.5, we have made a number of assumptions, which we have discussed with experts, in order to produce likely incidence figures. For these reasons, table 2 should not be quoted as being an official summary of the prevalence of low back pain either for Scotland or England.

1.3.9 Psychosocial factors have been shown to be important in disability related to back pain. Cognitive behavioural interventions can be used to optimise function and improve quality of life.

- 1.3.10 Fear-avoidance (that is, the avoidance of movements or physical activities because a person fears that the level of pain they are experiencing will get increase) has been shown to be part of the disabling pathway in people with chronic low back pain. Cognitive interventions have been used to reduce fear and uncertainty and to give the person the confidence that their back is robust even if it hurts.

1.4 *Models of care*

- 1.4.1 The initial point of contact and diagnosis of low back pain is likely to be in primary care. From here, people can be referred elsewhere (for example, for manual therapy in a local GP surgery or health centre).
- 1.4.2 If people are given a referral for a more specialised therapy, such as the combined physical and psychological treatment programme, then this may take place within secondary care. The costs of providing these treatments will fall under the responsibilities of local commissioners.

2 Costing methodology

2.1 *Process*

- 2.1.1 We use a structured approach for costing clinical guidelines (see appendix A).
- 2.1.2 Limited accurate and complete information is available on the current methods of treating low back pain. This has 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.

2.2 Scope of the cost-impact analysis

2.2.1 The guideline offers best practice advice on the care of adults who are suspected of having, or are diagnosed with, low back pain.

2.2.2 The guidance does not cover the following groups:

- Individuals who have low back pain because of specific spinal pathologies, including:
 - conditions with a specific pathology of a mechanical nature (for example, spondylolisthesis, scoliosis or vertebral fracture)
 - conditions of a non-mechanical nature (for example, ankylosing spondylitis or diseases of the viscera)
 - neurological disorders (including cauda equina syndrome)
 - serious spinal pathology (for example, neoplasms, infections or osteoporotic collapse).
- People with radiculopathy and/or nerve root pain (unilateral leg pain worse than the back pain, pain radiating to the foot or toes, numbness and paraesthesia in same distribution, which is associated with motor neurological deficit).
- Children under the age of 18 years.
- People with acute low back pain (less than 6 weeks' duration).
- People with non-specific low back pain of greater than 12 months' duration.

Therefore, these issues are 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 3). Costing work has focused on these recommendations.

Table 3 Recommendations with a significant resource impact

High-cost recommendations	Recommendation number	Key priority?
<p>Consider offering a structured exercise programme tailored to the person:</p> <ul style="list-style-type: none"> • This should comprise up to a maximum of eight sessions over a period of up to 12 weeks. • Offer a group supervised exercise programme, in a group of up to 10 people. • A one-to-one supervised exercise programme may be offered if a group programme is not suitable for a particular person. 	1.3.3	✓
<p>Consider offering a course of acupuncture needling comprising up to a maximum of 10 sessions over a period of up to 12 weeks.</p>	1.6.1	✓
<p>Consider offering a course of manual therapy, including spinal manipulation, comprising up to a maximum of nine sessions over a period of up to 12 weeks.</p>	1.4.1	✓
<p>Consider referral for a combined physical and psychological treatment programme, comprising around 100 hours over a maximum of 8 weeks, for people who:</p> <ul style="list-style-type: none"> • have received at least one less intensive treatment and • have high disability and/or significant psychological distress. 	1.7.1	✓
<p>Do not offer injections of therapeutic substances</p>	1.6.2	✓

into the back for non-specific low back pain.		
Only offer an MRI scan for non-specific low back pain within the context of a referral for an opinion on spinal fusion.	1.1.4	✓
Do not offer X-ray of the lumbar spine for the management of non-specific low back pain.	1.1.2	✓
Do not refer people for any of the following procedures: <ul style="list-style-type: none"> • intradiscal electrothermal therapy (IDET) • percutaneous intradiscal radiofrequency thermocoagulation (PIRFT) • radiofrequency facet joint denervation. 	1.9.4	

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

2.2.5 The recommendations covering information and education are not predicted to have a major resource impact because they can be carried out within primary care without the need for significant additional resources. There may be costs associated with the provision of specialised patient information, but these are unlikely to be significant and should be investigated on a local basis.

2.2.6 The NICE guidance recommends that people with low back pain should stay physically active and exercise. We have not costed this part of the guideline because it is likely to have very little cost impact on the NHS. However, we have costed the recommendation about structured exercise programmes (see section 3.1).

2.2.7 The provision of manual therapy has been classified as being likely to have a significant resource impact, even though it is already being offered as a treatment for low back pain. This is because the number of people receiving manual therapy is predicted to increase and the recommended number of sessions is higher than the current average.

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 and population estimates (see table 2).

2.3.2 The estimated future uptake percentages used within this model are based on existing treatment patterns and expert opinion. These are subject to variation, and may vary according to local circumstances.

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 For new or developing services, where there is no national average unit cost, organisations already undertaking this activity have been asked their current unit cost.

3 Cost of significant resource-impact recommendations

3.1 *Structured exercise programmes*

Background

3.1.1 The full recommendation says:

- Consider offering a structured exercise programme tailored to the person:
 - This should comprise up to a maximum of eight sessions over a period of up to 12 weeks.
 - Offer a group supervised exercise programme, in a group of up to 10 people.
 - A one-to-one supervised exercise programme may be offered if a group programme is not suitable for a particular person.

3.1.2 All exercise is potentially beneficial for preventing injuries, with aerobic exercise being especially beneficial. Increasing the flexibility and overall strength of the back can minimise the risk of injury, and if an injury does occur the pain experienced is likely to be less.

3.1.3 Leading a healthy and active lifestyle is recommended as one of the best ways to reduce the risk of low back pain. Where people present with low back pain that has lasted more than 6 weeks, they may be offered a structured exercise programme featuring:

- aerobic activity
- movement instruction
- muscle strengthening
- postural control
- stretching.

Assumptions made

- 3.1.4 Following discussions with experts, we have assumed that 10% of people with low back pain (that has lasted between 6 weeks and 12 months) are currently offered a structured exercise programme, and that this percentage will rise to 20% following implementation of the guideline.
- 3.1.5 We have assumed that each session lasts for 1 hour, and that each group exercise class is made up of eight people. This is again based on expert opinion.
- 3.1.6 In reaching a unit cost, we have assumed that this treatment would be provided by a physiotherapist currently employed on the midpoint of band 5 of 'Agenda for change'. We have also assumed that approximately 75% of their time will be spent directly treating patients, and that all their costs will be allocated across this number of hours.
- 3.1.7 We have assumed that each person will attend an average of eight classes. This figure is based on expert opinion. The entire calculation is shown in table 4.

Table 4 Average hourly rate for a structured group exercise programme

Total direct cost	Total hours in 12 months	Time spent treating patients	Actual working hours	Cost per hour	Number of people per class	Rate per session
£23,824	1547	70%	1083	£22	8	£2.75

Cost summary

- 3.1.8 The cost summary for implementation of this recommendation is shown in table 5.

Table 5 Cost of provision of structured group exercise programme

	Uptake	Number of patients	Cost per person per course	Total cost (£000s)
Current	10%	35,964	24	863
Future	20%	71,928	24	1,726
Change	10%	35,964	0	863

Other considerations

3.1.9 This recommendation is not projected to have the largest cost impact, for two reasons: the unit cost of a course is low (£24), and expert opinion is that people are more likely to choose acupuncture or manual therapy rather than group exercise classes. We have not costed the provision of individual group programmes as the uptake of this option is predicted to be very low.

3.1.10 This costing work only takes into account the direct labour costs required to provide this exercise programme. A suitable environment is required to provide the exercise programme, and these costs should be investigated on a local basis.

3.2 Acupuncture

Background

3.2.1 The full recommendation says:

- Consider offering a course of acupuncture needling comprising up to a maximum of 10 sessions over a period of up to 12 weeks.

3.2.2 Medical acupuncture employs acupuncture needling in the treatment of specific health conditions following diagnosis by conventional methods.

3.2.3 At present, there is no government legislation in the UK covering the accreditation of acupuncture courses. The British Acupuncture

Council Association (BACC) is a private enterprise that sets its own standards for accrediting 3-year academic courses.

Assumptions made

- 3.2.4 We have assumed that acupuncture is currently available as a treatment option to people with low back pain that has lasted more than 6 weeks but less than 12 months. We have also assumed that the current average duration of treatment is six sessions (based on discussion with experts).
- 3.2.5 We have assumed current use of acupuncture to be 5% of people who have visited their doctor for low back pain that has lasted longer than 6 weeks but less than 12 months. This is based on discussions with experts and examination of studies (such as Gracey et al. 2002, which looks at the percentage of therapists who currently treat people for low back pain who have completed a postgraduate qualification in acupuncture).
- 3.2.6 We estimate that the number of acupuncture sessions will increase following implementation of the guideline. The guideline recommends up to a maximum of 10 sessions. However, on the basis of clinical trial results (Macpherson et al. 2003) it has been estimated that the average number of sessions required to treat low back pain is 8.6 per person. Therefore we have assumed that the implementation of the guideline will require an additional 2.6 sessions per person on average.
- 3.2.7 We have assumed that this treatment will be carried out by the same level of therapist as those who provide the exercise programme. Therefore the hourly rate we have used can be seen in table 4.

Cost summary

- 3.2.8 The net cost of the provision of acupuncture is summarised in table 6.

Table 6 Cost of provision of acupuncture

	Uptake	Number of patients	Number of sessions per course	Cost per session	Total cost (£000s)
Current	5%	17,982	6	£25	2,697
Future	35%	125,874	8.6	£25	27,063
Change	30%	107,892	2.6	£0	24,366

Other considerations

- 3.2.9 The increased provision of acupuncture will place extra demands on services. Additional staff training may be required in order to ensure that treatment is carried out correctly.
- 3.2.10 Depending on where this treatment is commissioned from the costs of provision may vary. This should be investigated on a local basis.
- 3.2.11 A suitable environment is also required in order for acupuncture to be carried out and these costs should be investigated on a local basis.

3.3 *Manual therapy*

Background

3.3.1 The full recommendation says:

- Consider offering a course of manual therapy, including spinal manipulation, comprising up to a maximum of nine sessions over a period of up to 12 weeks.

3.3.2 Manual therapy is a general term for a clinical approach utilising skilled, specific, hands-on techniques that involve manipulation, massage, and soft tissue and joint mobilisation. The manual therapies reviewed in the NICE clinical guideline were spinal manipulation, spinal mobilisation and massage. Collectively these are all manual therapy.

3.3.3 Mobilisation therapy involves joint movement within the normal range of motion. Massage is manual manipulation or mobilisation of soft tissues. Mobilisation and massage are performed by a wide variety of practitioners.

3.3.4 Manipulation is a low-amplitude, high-velocity movement at the limit of joint range. It can be performed by chiropractors and osteopaths, as well as by doctors and physiotherapists who have undergone specialist postgraduate training in manipulation. Complications resulting from manipulation are rare, but it is important to recognise that specialist training is required.

Assumptions made

3.3.5 We have used a current average number of five sessions for this costing work, based on discussion with experts and examination of the results of the UK back pain, exercise and manipulation (BEAM) study (Brealey 2004).

3.3.6 We estimate that the current percentage of people with low back pain receiving manual therapy is 5%. This is based on discussions

with experts and studies (Li et al. 2001) suggesting that only a small percentage of people are currently receiving the specific type of treatment that is recommended in the guideline.

3.3.7 The hourly rate we have used is based on the market rate for employing an osteopath. This is estimated to be £50 per hour, based on enquiries into market rates. We have also assumed that an osteopath can be expected to see an average of two patients per hour, once initial patient assessments have been carried out.

3.3.8 We have estimated that implementation of the guideline will result in, on average, an additional 1.5 sessions per person. We have used this figure because it reflects the average number of sessions required for manipulation and exercise, as identified in the UK BEAM study (Brealey 2004). We have consulted with experts from the GDG who have confirmed that this figure is suitable for use in the costing tools.

3.3.9 The estimated future uptake of manual therapy of 35% has been reached through discussions with experts on the GDG.

Cost summary

The net cost associated with the provision of manual therapy is summarised in table 7.

Table 7 Cost of provision of manual therapy per person

	Cost per session	Number of sessions	% uptake	Number of patients	Cost (£000s)
Current	£25	5	5%	35,964	£4,496
Future	£25	6.5	35%	125,874	£20,455
Change		1.5	30%	89,910	£15,959

Other considerations

3.3.10 Specialised training is required in order to provide certain types of manual therapy. Physiotherapists who have not previously received this training would be required to attend training courses, which can

cost between £195 and £400 (based on figures from a selection of training providers). Therefore these staff training costs must be considered.

- 3.3.11 It is also important to note that people who have received this training are able to both work for the NHS and undertake private work. This possible resource constraint should be considered when evaluating the cost implications of the recommendation.
- 3.3.12 Additional people receiving this treatment are assumed not to be 'new' to overall treatment, and it is assumed that they are currently receiving other physical therapies (see section 3.9) that are not included in the guideline. Therefore this therapy will result in some resource redistribution (see section 3.9).
- 3.3.13 As with the exercise programme and acupuncture, manual therapy requires a suitable environment in which to carry out the treatment. These costs should be investigated on a local basis.

3.4 *Combined physical and psychological treatment programmes*

Background

- 3.4.1 The full recommendation says:
- Consider referral for a combined physical and psychological treatment programme, comprising around 100 hours over a maximum of 8 weeks, for people who:
 - have received at least one less intensive treatment **and**
 - have high disability and/or significant psychological distress.
- 3.4.2 Evidence suggests (Guzmán et al. 2001) that combined physical and psychological treatment reduces pain when compared with outpatient non-multidisciplinary rehabilitation or usual care.
- 3.4.3 This treatment can be provided in a group setting or, where this is unsuitable, on an individual basis.

- 3.4.4 Because of the high cost of providing this treatment, places are extremely limited. The Pain Society estimates that there are approximately 1000 places currently available on combined physical and psychological treatment programmes for low back pain (Waring et al. 2006).
- 3.4.5 This type of treatment is already available through the NHS. However, the structure of the programmes can vary between providers, with the costs of provision varying accordingly. The guideline recommends up to 100 hours of combined treatment; however, some programmes have experienced success using different amounts of time.
- 3.4.6 It is difficult to predict what the exact uptake of this treatment is likely to be. This is partly because of a number of treatments are recommended in the guideline for use before the combined programme, and also reflects the current lack of availability of such programmes.

Assumptions made

- 3.4.7 We have estimated that the current number of treatment places is equivalent to approximately 0.3% of people diagnosed with low back pain. This is based on information from the Pain Society on the number of places available at specialist pain clinics in England.
- 3.4.8 We have provided separate costing for group and individual combined physical and psychological treatments, because they have different unit costs, and their future use will also vary.
- 3.4.9 Unit costs have been based on the costs of providing existing programmes. As mentioned in 3.4.5, the programme structure can vary between providers and the unit costs can also vary. We have addressed this variance in the sensitivity analysis section of our costing template.

Cost summary

3.4.10 The net cost of the use of combined physical and psychological treatment programmes is summarised in table 8.

Table 8 Cost of provision of combined physical and psychological treatment programmes

Group therapy		Cost per course	% uptake	Number of patients	Cost (£000's)
	Current		£4,000	0.275%	989
Future		£4,000	1.000%	3,596	£14,386
Change			0.725%	2,607	£10,430
<hr/>					
Individual therapy		Cost per course	% uptake	Number of patients	Cost (£000's)
	Current		£5,500	0.025%	90
Future		£5,500	0.005%	18	£99
Change			-0.020%	-72	-£396
<hr/>					
Net Cost / Saving			0.705%	2,535	£10,034

Other considerations

3.4.11 As with the other physical therapies that are recommended (exercise programmes, acupuncture and manual therapy), these programmes require a suitable environment in which to provide the treatment. These costs should be investigated on a local basis.

3.5 Injections of therapeutic substances into the back

Background

3.5.1 The full recommendation says:

- Do not offer injections of therapeutic substances into the back for non-specific low back pain.

3.5.2 Injections of therapeutic substances into the back are often used to control symptoms. They are also used to allow physical therapy (see section 3.9) to progress by managing the level of pain so that other treatments can be used. Evidence suggests that other therapies are more effective at solving the problem of low back pain.

Assumptions made

3.5.3 We have used Hospital Episode Statistics (HES) data to establish the number of injections currently being carried out in England. To do this we included all injections that have been carried out under a range of primary diagnosis codes that we agreed with experts. These codes are listed in Appendix C. We have also assumed that 95% of these injections will not be carried out after implementation of the guideline.

3.5.4 In order to obtain a unit cost for injections, these procedures were mapped to the appropriate cost category within HRG4 (National Mandatory Tariff 2009/10 Codes AB02Z – AB04Z).

Cost summary

3.5.5 The estimated cost savings from the implementation of this recommendation are shown in table 9.

Table 9 Cost impact of reduction in number of injections of therapeutic substances into the back

Current number of injections	% reduction in injections	Reduction in injections	Cost per injection	Predicted cost saving (000s)
65,564	95%	62,286	£540	£33,634

3.6 MRI scans

Background

3.6.1 The full recommendation says:

- Only offer an MRI scan for non-specific low back pain within the context of a referral for an opinion on spinal fusion.

Assumptions made

3.6.2 Currently no accurate data exist on the number of scans being performed in all stages of care. As a result of this we have worked with experts from the GDG to estimate that 20% of people with low back pain are receiving an MRI scan. .

3.6.3 We have used the national tariff rate (National Mandatory Tariff 2009/10 version 4, code: RA01Z) for the unit cost of £173 to price MRI scans. This rate is for a one-area scan with no contrast.

Cost summary

3.6.4 The projected cost savings from this recommendation are shown in table 10.

Table 10 Cost impact of reduction in MRI scans

Current number of MRI scans	% reduction in MRI scans	Reduction in MRI scans	Cost per MRI scan	Predicted cost saving (£000s)
71,928	95%	68,332	£173	£11,821

3.7 X-rays

Background

3.7.1 The full recommendation says:

- Do not offer X-ray of the lumbar spine for the management of non-specific low back pain.

Assumptions made

3.7.2 We have worked with experts to estimate the current use of X-rays, because no definitive data are currently available. Based on their opinions, we have assumed that currently approximately 20% of people with low back pain that has lasted between 6 weeks and 12 months will receive an X-ray. We have also assumed an 80% reduction in the number of X-rays following implementation of the guideline.

3.7.3 The unit price of a single-area X-ray has been taken from the National Tariff (National Mandatory Tariff 2009/10 version 4).

Cost summary

3.7.4 Estimated cost savings from this recommendation are shown in table 11.

Table 11 Cost impact of reduction in X-rays

Current number of X-rays	% reduction in X-rays	Reduction in X-rays	Cost per X-ray	Predicted cost saving (£000s)
71,928	80%	57,542	£24	£1,381

3.8 *Radiofrequency facet joint denervation*

Background

3.8.1 The full recommendation says:

- Do not refer people for any of the following procedures:
 - intradiscal electrothermal therapy (IDET)
 - percutaneous intradiscal radiofrequency thermocoagulation (PIRFT)
 - radiofrequency facet joint denervation

Assumptions made

3.8.2 To establish the number of radiofrequency facet joint denervation procedures that are currently being performed in England, we consulted with experts to examine the available HES data

(2007/2008) for this subject area. We also assumed that 95% of these procedures will not be carried out after implementation of the guideline. We then mapped the relevant procedure codes to the HRG tariff (HRG 4: 2009/10: Codes AB02Z–AB03Z) to establish their relevant unit cost.

Cost summary

3.8.3 Estimated cost savings from this recommendation are shown in table 12.

Table 12 Cost impact of reduction in radiofrequency facet joint denervation

Current number of denervation procedures	% reduction in procedures	Reduction in denervation procedures	Cost per procedure	Predicted cost saving (000s)
4,948	95%	4,701	£540	£2,538

Other considerations

3.8.4 The use of radiofrequency facet joint denervation is not the only action included in this recommendation. However, the low numbers of patient currently being treated with intradiscal electrothermal therapy or percutaneous intradiscal radiofrequency thermocoagulation mean that the potential cost savings are too low to include in our costing work.

3.8.5 In order to fully understand the impact of this recommendation at a local level, the costing template should be amended to reflect local circumstances.

3.9 *Other physical therapies*

Background

3.9.1 A range of physical therapies are currently available on the NHS to treat the symptoms of low back pain. An example of this could be simple physiotherapy without the use of manipulation (which is not

recommended in the guideline). As discussed earlier, the only physical therapies that are being recommended are a structured exercise programme, acupuncture and manual therapy. This means that other physical therapies will not be provided. The costs that would otherwise have been incurred in the provision of these treatments will help to offset costs that occur as a result of implementation of the guideline.

Assumptions made

- 3.9.2 In order to estimate how many people are currently receiving other forms of physical therapy, we consulted expert opinion. The general consensus was that approximately 80% of people with low back pain would be receiving one of exercise therapy, acupuncture, manual therapy or another form of physical therapy. Based on the percentages we have used above for exercise, acupuncture and manual therapy, we estimate that 55% of people will currently be receiving another physical therapy.
- 3.9.3 We have also assumed that these therapies are being performed by a physiotherapist employed within 'Agenda for change' band 5. This may vary, but it is not possible to quantify this variance.

Cost summary

- 3.9.4 The estimated cost savings are shown in table 13.

Table 13 Cost impact of reduction in people receiving other physical therapies

Number of people currently receiving other physical therapies	% reduction in other physical therapies	Reduction in other physical therapies	Cost per session	Average number of sessions	Average cost per course	Predicted cost saving (£000s)
17,693	80%	14,154	£25	£5	£125	£1,769

3.10 *Other benefits and savings*

- 3.10.1 The implementation of this guideline is also expected to generate savings through a reduction in the frequency and duration of inpatient stays. Current expenditure on inpatient treatment for low back pain is estimated at over £60 million (based on HES data and average bed day costs). This illustrates the potential size of cost savings.
- 3.10.2 Because a patient's first interaction is often with a GP, any reduction in frequency of visits may also provide cost benefits in this area of care.

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*

Increased use of acupuncture

- 4.2.1 As shown in appendix B, there is a significant potential variance in the cost of this recommendation. The large number of potential patients means that small increases in percentage uptake will have a significant cost impact.

Increased number of manual therapy sessions

- 4.2.2 The guideline recommends up to nine sessions of manual therapy, which is greater than the current average number of sessions. However, because a *maximum* of nine sessions is recommended, the average number of sessions may be less. The sensitivity analysis shows the potential variance. However, it should be noted that percentage uptake is also subject to variation in addition to the number of sessions.

5 Impact of guidance for commissioners

- 5.1.1 The treatment of low back pain within secondary care is covered within 'Payment by results' and will need to be budgeted for appropriately. Any treatment undertaken in primary care is currently outside the scope of Payment by results.
- 5.1.2 Low back pain costs fall under the programme budgeting category 215X.

6 Conclusion

6.1 *Total national cost for England*

6.1.1 Using the significant resource-impact recommendations shown in table 3 and the assumptions specified in section 3, we have estimated the annual cost impact of fully implementing the guideline in England to be a cost of £77,477. Table 14 shows the cost impact of each significant resource-impact recommendation.

Table 14 Total national cost impact^a^a Red text denotes negative numbers

	National population
Area costed	Standard assumptions (£000s)
Exercise therapy	863
Acupuncture	24,366
Manual therapy	15,959
Combined group physical and psychological treatment programme	10,430
Total cost increases	51,617
Combined individual physical and psychological treatment programme	-396
Reduction in injections into the base of the spine	-33,634
Reduction in MRIs carried out	-11,821
Reduction in physical therapies	-1,769
Reduction in x rays	-1,381
Reduction in use of Denervation	-2,538
Total cost savings	-51,540
Total cost impact	77

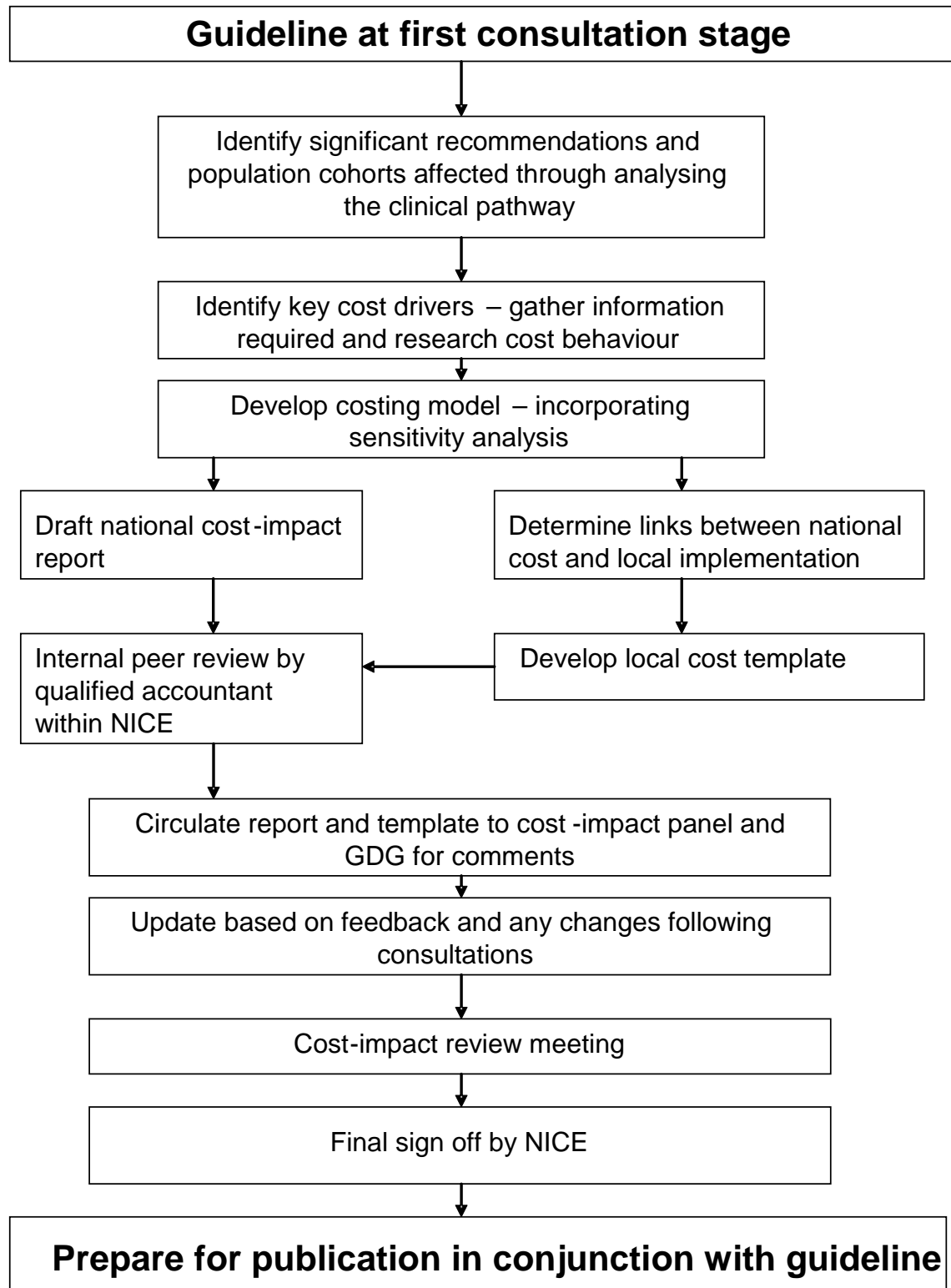
6.1.2 We applied reality tests against existing data wherever possible, but this was limited by the availability of detailed data. We consider this assessment to be reasonable, given the limited detailed data regarding diagnosis and treatment paths and the time available. However, the costs presented 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 incur a cost of approximately

£150. 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^a

^a Red text denotes negative numbers

Assessment of sensitivity costs to a range of variables							
Parameter varied	Baseline value	Minimum value	Maximum value	Baseline costs (£000s)	Minimum costs (£000s)	Maximum costs (£000s)	Change (£000s)
Increase in cost per course of exercise therapy	£24	£20	£30	863	719	1,079	360
Additional uptake of acupuncture	12.5%	10.0%	15.0%	24,366	19,493	29,239	9,746
Increased cost of acupuncture	£25	£15	£40	24,366	14,619	38,985	24,366
Increase in manual therapy sessions	6.5	5	9	15,959	0	26,074	26,074
Increase in cost per course of manual therapy	£125	£100	£200	15,959	12,767	25,534	12,767
Additional uptake of combined physical and psychological treatment programme	0.725%	0.1%	1.00%	10,430	1,439	14,386	12,947
Reduction in injections into the base of the spine	95%	80%	100%	(33,634)	(28,324)	(35,405)	(7,081)
Reduction in MRIs carried out	95%	80%	100%	(11,821)	(9,955)	(12,444)	(2,489)
Reduction in X-rays carried out	80%	60%	100%	(1,381)	(1,036)	(1,726)	(691)

Appendix C: Hospital Episode Statistic Codes

Injections into the base of the spine

The following codes were included in order to establish the current volume of injections being carried out:

M545	G548	M429	D361	M899	C541	K861	C859	M755	M051	N359
M549	B022	G959	G570	C798	M939	R203	O909	F110	R268	T814
M478	M179	I739	M707	M484	G821	C701	G552	I252	M241	I830
M513	M059	M468	C519	J47X	E119	R936	P288	O140	R300	A521
M479	M402	M869	M064	M879	G950	C721	G978	C482	I713	N398
M431	M540	M751	G459	K594	N644	K589	M332	O16X	K805	T840
R69X	M509	R208	M804	G578	M436	K922	D166	M768	I714	I890
M548	M150	M357	O998	G528	J22X	G932	J690	M308	R520	T846
M519	G571	M754	M191	C251	M460	C762	G979	G620	E109	N418
M518	M060	M413	G442	S309	O294	T919	Q765	O631	G248	C64X
M199	N508	I10X	M213	G580	C780	C187	C419	D868	I723	N419
M430	N948	G546	S325	M853	J440	O141	M359	O700	R600	T912
R521	M161	G560	M329	G587	M483	C19X	H578	I259	M242	N488
M139	G588	S134	S220	G440	O993	O722	R11X	G64X	R838	C65X
R103	M258	M531	Q658	M080	C793	C778	C218	I350	M246	F104
M438	C349	O895	C829	O743	Q762	O899	R252	O748	S066	Z380
G629	T848	M948	M800	M123	M609	C779	L948	M192	I730	C782
M539	G319	M628	M414	R070	Q850	Q056	R31X	O800	S136	Z451
G971	C61X	I209	K660	A879	M629	C402	M659	E039	M910	C787
M485	M481	C56X	S272	S399	R33X	B954	G20X	J441	S221	Z515
M706	M532	C20X	M170	A419	M653	L298	M674	M811	M930	C788
M418	M968	C509	M068	M840	K509	R100	K264	O908	G253	C791
G951	L905	N908	C902	M152	M720	Z038	M678	M198	C504	O267
M489	Q764	G572	G970	I702	S327	J969	K359	G700	K519	K625
M898	M508	S270	M866	C414	G562	Z098	D573	I501	I738	
R522	M160	G960	I200	E114	S335	M083	S222	P071	K573	
M190	S223	S320	J181	G600	G500	Z390	H920	M839	C341	
M257	M411	M841	D649	N301	T028	K440	K566	P38X	K579	
R074	M439	M470	G431	M171	M766	Z479	M708	C491	E116	
M791	M995	M722	N909	O268	T819	M112	S321	Q057	S324	
S224	G958	M750	M313	M233	G569	A180	G379	G444	M969	
M997	M998	S342	M404	O749	I48X	S337	M410	J61X	G374	
G544	M420	M818	T876	M249	M844	K629	M715	M843	M253	
M890	Q675	I743	Q059	Q763	O438	G909	S361	Q718	C343	
M808	O746	C900	G628	M254	M109	G545	M719	K603	E144	
G589	G834	K85X	G501	R54X	Q796	T812	S422	K668	K590	
K628	M130	M893	J459	M318	M131	G438	M175	M219	B349	

G318	G952	N739	G564	S331	T823	A549	T092	G114	S370	
M248	T885	G961	M713	M350	C185	G968	I120	M854	N029	
G35X	M464	G540	M138	T402	G573	C160	T797	Q774	S420	
M798	M259	G249	E882	G710	C670	C819	M725	M855	N200	
M415	G542	M421	M759	M816	R470	O021	A541	G711	S934	
L405	G119	M889	N390	M400	C679	M530	C450	M856	N23X	
M500	S225	Q760	G258	I620	C180	A178	T843	J90X	T08X	
M405	G439	C80X	N411	G801	C689	G969	I208	M858	N281	
M432	G448	M514	G579	I639	C510	O688	A86X	G122	T251	
M353	R298	G373	C259	C539	M433	B24X	M753	M224	C342	
T818	M888	I258	M799	M878	M061	M314	M256	J939	T66X	
G541	M412	G039	M401	G809	M434	C851	M181	M232	N328	
M538	R202	M960	C159	M895	G049	O860	J189	J942	T808	

Radiofrequency facet joint denervation

The following codes were included in order to establish the volume of denervation treatments currently being performed: V485

V486

V487

V488

V489

The primary diagnosis codes that we included were:

- Low back pain
- Dorsalgia, unspecified
- Other spondylosis
- Spondylosis, unspecified
- Other specified intervertebral disc degeneration
- Other specified intervertebral disc displacement
- Other

Appendix D. References

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