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The incidence and healthcare costs of persistent post-operative pain following lumbar spine surgery in the United Kingdom

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Abstract

Objective: To characterize incidence and healthcare costs associated with persistent post-operative pain (PPP) following lumbar surgery.

Design: Retrospective, population-based cohort study.

Setting Clinical Practice Research Datalink (CPRD) and Hospital Episode Statistics (HES) databases.

Participants: Population-based cohort of 10,216 adults who underwent lumbar surgery in England from 1997/98 through 2011/12 and had at least one year of pre-surgery data and two years of postoperative follow-up data in the linked CPRD-HES.

Primary and secondary outcomes measures: Incidence and total healthcare costs over 2, 5, and 10 years attributable to persistent postoperative pain following initial lumbar surgery.

Results: The rate of individuals undergoing lumbar surgery in the CPRD-HES linked data doubled over the 15-year study period, fiscal years 1997/98 to 2011/12, from 2.5 to 4.9 per 10,000 adults. Over the most recent five-year period (2007/08 to 2011/12), on average 20.8% [95% CI: 19.7% to 21.9%] of lumbar surgery patients met criteria for PPP. Rates of health care utilisation were significantly higher for patients with PPP across all types of care. Over two years following initial spine surgery, the mean cost difference between patients with and without PPP was £5,383 [95% CI: £4,872-£5,916]. Over five and ten years following initial spine surgery, the mean cost difference between patients with and without PPP increased to £10,195 [95% CI: 8,726 to 11,669] and £14,318 [95% CI: £8,386 to 19,771], respectively. Extrapolated to the UK population, we estimate nearly 5,000 adults experience PPP after spine surgery annually, with each new cohort costing the UK NHS in excess of £70 million over the first 10 years alone.

Conclusions: Persistent pain affects more than one-in-five lumbar surgery patients and accounts for substantial long term health care costs. There is a need for formal, evidence-based guidelines for a coherent, coordinated management strategy for patients with continuing pain after lumbar surgery.

Keywords:

Persistent post-operative pain (PPP); Failed back surgery syndrome (FBSS); lumbar surgery; Clinical Practice Research Datalink (CPRD); Hospital Episode Statistics (HES)

Strengths and limitations of this study

- This is the first study to estimate the occurrence of PPP following lumbar surgery using a sample of surgical patients selected from routinely collected UK hospital and primary care data
- Our estimates of healthcare utilisation and costs are based on real world experiences of the full range of lumbar surgery patients found in clinical practice
- A limitation of using electronic medical records data is the classification of patients with PPP as there is a no specific diagnosis code or set of codes for the condition of PPP and our data do not contain information on pain scores commonly used to assess the existence and severity of chronic pain following recovery from surgery
- In contrast with previous studies that have relied on multiple assumptions regarding treatment patterns or on small and/or non-representative patient samples, we were able to calculate more precise estimates of PPP following lumbar surgery

INTRODUCTION

Persistent post-operative pain in lumbar surgery patients—more commonly known as failed back surgery syndrome (FBSS)—refers to chronic back and/or leg pain that continues or recurs in some patients following spinal surgery. It may be caused by one or a combination of factors including: residual or recurrent disc herniation, persistent post-operative compression of a spinal nerve, altered joint mobility, joint instability, scar tissue (fibrosis), and spinal muscular deconditioning.[1-3] Patients form a diverse group, with complex and varied aetiologies and symptoms.[4,5]

Authoritative publications, mainly large case series and clinical trials, report that 10-40% of all patients who undergo lumbar surgery develop some form of chronic post-operative pain.[6-14] In 2013, Thompson took a mid-range estimate of 20% failure applied to a rate of lumbar surgery in the UK population of 5 per 10,000 people and concluded that there are approximately 6,000 new cases of PPP following spine surgery in the UK every year.[15] More precise estimates for the UK are not available.

Up-to-date, population-based estimates of incidence are needed to keep pace with surgical advances and to inform health care system spending in this population. Using a formal and more rigorous epidemiological data-driven approach, we aim to provide robust estimates of the incidence and health care costs associated with PPP following lumbar surgery in the UK over a 15-year period, from 1997/98-2011/12.

METHODS

Setting and data sources

This study employs a retrospective cohort design using two linked UK databases: the Hospital Episode Statistics (HES) database and UK Clinical Practice Research Datalink (CPRD).

A supplementary online appendix provides more detail on these data. Approval was granted by the Independent Scientific Advisory Committee for Medicines and Healthcare products Regulatory Agency (MHRA) on December 17, 2014 (ISAC Protocol 14-180R).

Study participants

Incidence of lumbar surgery was calculated on a patient-basis, as the number of patients aged 18 and above who underwent one or more lumbar procedures in a given fiscal year, expressed as a rate per 10,000 adults in the CPRD-HES linked dataset. Index operative procedures included any single procedure or combination of discectomy/microdiscectomy, excision of lumbar intervertebral disc, laminectomy, foraminotomy, lumbar decompression (or fenestration) or lumbar fusion (including all anterior and posterior approaches as well as combined approaches). Patients were required to have at least two years of follow up data to allow sufficient time to observe criteria for PPP following the index surgery.

Definition of Persistent Postoperative Pain

From our lumbar surgery cohort, we categorized each individual as a 'success' (i.e., no evidence of PPP) or 'failure' (i.e., evidence of PPP). Any one of the following three criteria, alone or in combination, were taken as evidence of pain continuing past the expected period for recovery following index lumbar surgery:

1. any additional lumbar surgery of any type occurring between 6-24 months post-index surgery;
2. a minimum of one pain-related physician visit in each of two consecutive quarters at any point during the 6-24 months post-index surgery identified using READ codes in CPRD or treatment specialty codes in the HES Outpatient file;

3. any other surgical intervention (e. g., neuromodulation, implantation of drug infusion delivery system) to address pain occurring at any time, not limited to 24 months after the index surgery, identified from either CPRD or the HES inpatient or outpatient datasets.

Prescription of analgesics (including opioids, non-steroidal anti-inflammatory drugs (NSAIDs), antidepressants or anticonvulsants/antiepileptic drugs used for pain, and other analgesic therapies for a period of at least 6 months from 6-24 months post-index) was not by itself considered evidence of persistent postoperative pain as patients may be prescribed analgesics for other painful conditions.

A minimum period of three months has been proposed for tissue healing after surgery and this time period is also used to define chronicity of pain.[16-18] We applied a more stringent, minimum six-month period after the index lumbar surgery for patients to recover from normal, expected postoperative pain. Any additional spine surgery that occurred during that period was assumed to be related to surgical complications of the index lumbar procedure, rather than treatment of PPP. The literature suggests that some patients initially appear to improve following lumbar surgery but later become increasingly bothered by pain.[4,19,20] Therefore, we allowed for a period of 18 months (6-24 months post-index surgery) over which to evaluate evidence of unresolved, chronic pain based on recorded ongoing interventions.

Healthcare utilisation and costs

A standard cost-of-illness approach[21,22] was taken to estimate total healthcare costs from the perspective of the UK National Health Service (NHS). We classified all health care

encounters into major categories of health care resource utilisation and assigned unit costs following standard practice for cost-of-illness and cost effectiveness research (see online-only supplementary information on cost methodology and unit cost tables). Consistent with other studies of resource utilisation among similar populations,[23] we estimated total cost per patient over 24 months for all patients in our study (excluding the cost of the index surgery). We then extended our analysis out to five and ten years post-index surgery among the subsets of patients with sufficient follow up data. To account for inflation and variations in pricing over time, 2013 unit costs were applied to all years. Total costs incorporated direct (including medical staff), indirect and overhead costs paid by the NHS. Finally, using these per patient estimates, we projected the total number of PPP cases in the UK annually and the associated costs to the NHS.

Statistical analyses

To estimate rates of PPP, we computed the number of patients who met our criteria for PPP as a percentage of all patients who underwent initial lumbar surgery within the time frame. The comparison group of no persistent post-operative pain was drawn from among lumbar surgery patients who fulfilled the 'no PPP' criteria. We used 1:1 propensity score matching (without replacement) based on patient's age at surgery, gender, year in which surgery took place, type of initial surgery (fusion vs. decompression), and presence of each of seventeen comorbidities that comprise the Charlson Comorbidity index (CCI) using the greedy matching algorithm.[24-26]

We estimated healthcare utilisation over a two-year period for patients with PPP versus the matched controls and presented: (i) the proportion of patients who had a non-zero healthcare resource utilisation and the number of encounters by category (i.e., primary

care, inpatient care, outpatient attendances, outpatient procedures, accident and emergency care, and prescriptions for pain medications), and (ii) costs among users of the respective type of services/events (in order to provide insight into the intensity of resource utilisation among users of these services). Next, we estimated total health care costs by category of health care utilisation for all patients. Finally, we estimated the cost attributable to PPP as the difference in total costs for all PPP patients versus no PPP controls over the time periods two, five and ten years post-index surgery.

Statistical significance of differences between patients with and without PPP were evaluated using Fisher's exact tests for categorical predictor variables and Wilcoxon tests for continuous predictor variables. The main analyses compared the matched PPP cases and controls using Fisher's exact tests for healthcare utilisation and bootstrapping for differences in average costs. All data manipulation and analyses were conducted using SAS software, Version 9.4 for Windows [SAS Institute, Cary NC].

Sensitivity analysis

In sensitivity analyses, we adjusted costs using generalised linear models (using log link and gamma distribution), extended estimating equations, and ordinary least squares.

RESULTS

Rates of lumbar surgery in HES (among patients with linked CPRD data)

From the linked CPRD-HES database, we identified 10,216 adults who underwent lumbar surgery from fiscal years 1997/98 through 2011/12 and who had at least 12 months of pre-surgery data (used to identify pre-surgical comorbid conditions and exclude those with previous lumbar surgery) and with 24 months follow up. Incidence of PPP was adjusted to

reflect the age and sex distribution of the UK population in each year of the study.[27] The age/sex adjusted rate of lumbar surgeries grew steadily from 2.41 per 10,000 in 1997/98 to reach a peak of 4.94 per 10,000 in 2010/11 before falling slightly in 2011/12 to 4.70 per 10,000. The denominator included all patients within the linked CPRD/HES dataset with at least 36 months of follow-up to be comparable to the lumbar surgery group (Figure 1).

Percentage of lumbar surgery patients with persistent postoperative pain (cases)

Of the 10,216 adults undergoing lumbar surgery in fiscal years 1997/98-2011/12, 1,756 (17.2%; 95% CI: 16.5% to 17.9%) patients met our criteria for PPP. Among patients with PPP, 85.4% were prescribed pain medication for at least six months compared with 50.3% of patients who did not meet PPP criteria.

Figure 2 shows the impact on our estimates of PPP from including the HES outpatient data, available from 2008 onwards. The dotted line includes patients identified as having PPP using only the CPRD general practice file plus HES inpatient file. The solid line includes patients identified using these files plus the HES outpatient file, accredited as a National Statistic since 2008. The percentage of patients with PPP captured without the HES outpatient file was fairly stable over the entire 15-year study period, but doubles with the inclusion of HES outpatient data. The percentage of patients with PPP early in the study period is likely to be underestimated as hospital pain clinic visits were not recorded. The more recent data is more likely to be reflective of current UK practice. On average, over the most recent five-year period, 20.8% [95% CI: 19.7% to 21.9%] of eligible patients met our criteria for PPP.

PPP cases versus lumbar surgery patients without PPP

Prior to matching, a comparison of patients with PPP versus those without showed that PPP patients were younger, more likely to be female and have a slightly higher comorbidity burden, as measured by the Charlson Comorbidity Index. After propensity score matching, as expected, there were no significant differences between the cases and controls (Table 1).

Table 1: Characteristics of lumbar surgery patients with and without PPP before and after selecting propensity score matched control group

	Before matching			After matching		
	No PPP n=8460	PPP n=1756	P value	No PPP n=1756	PPP n=1756	P value
Age at surgery (years), mean (sd)	53·6 (16·0)	52·9 (15·5)	0·044	52·1 (16·0)	52·9 (15·5)	0·16
Male, %	50·7	43·3	<0·001	43·0	43·3	0·86
Charlson Comorbidity Index (CCI), mean (sd)	1·1 (2·0)	1·2 (2·0)	0·002	1·1 (1·8)	1·2 (2·0)	0·06

P-values were based on Fisher's exact tests for categorical and Wilcoxon tests for continuous variables.

Health care utilisation and cost

Compared to patients without, those with PPP had significantly increased rates of health care utilisation for all health care encounter types. The difference was largest for inpatient hospital care at 77.5% for those with PPP versus 44.9% for those without. Patients with PPP were more than twice as likely as those without PPP to have had two or more inpatient stays in the two years following index surgery.

Amongst those who used care in each of these settings, costs were in most cases significantly greater in the presence of PPP. In particular, PPP was associated with a three-

fold increase in average pain medication costs (£1,165 versus £382). Greater costs were also observed in inpatient, outpatient hospital and primary care settings, indicating greater intensity of resource utilisation for patients with PPP in each of these settings (Table 2). Comparing total costs for patients with PPP versus matched controls (no PPP) including both users and non-users of each service, we found that the mean additional cost attributable to PPP in the two years following surgery was £5,383 per patient (Table 3). Inpatient costs accounted for almost half (46.5%) of the cost differential and primary care contributed 26.9%.

Table 2: Health care resource use and costs (2013 British Pounds) in the two year period following index surgery among users of services, cases (PPP) versus propensity score matched controls (no PPP)

	Health care utilisation		Costs among users only	
	No PPP (N=1756)	**PPP (N=1756)**	**No PPP**	**PPP**
	n (%)	**n (%)**	**mean (sd)**	**mean (sd)**
Any inpatient	788 (44·9)	1,361 (77·5) **	£3,678 (4,520)	£5,357 (5,282) **
0	968 (55·1)	395 (22·5)		
1	377 (21·5)	484 (27·6)		
2	192 (10·9)	351 (20·0)		
>2	219 (12·5)	526 (29·9)		
Any Outpatient attendances	1,510 (86·0)	1,606 (91·5) **	£783 (975)	£1,316 (1,149) **
0	246 (14·0)	150 (8·5)		
1 - 6	904 (51·5)	438 (24·9)		
7-12	349 (19·9)	512 (29·2)		
> 12	257 (14·6)	656 (37·4)		
Any Outpatient	435 (24·8)	583 (33·2) **	£540 (817)	£664 (875) *

procedures				
0	1321 (75·2)	1,173 (66·8)		
1	203 (11·6)	221 (12·6)		
2	86 (4·9)	116 (6·6)		
>2	146 (8·3)	246 (14·0)		
Any Accident & emergency	325 (18·5)	484 (27·6) **	£257 (193)	£265 (213)
0	1,431 (81·5)	1,272 (72·4)		
1	205 (11·7)	306 (17·4)		
2	67 (3·8)	94 (5·4)		
>2	53 (3·0)	84 (4·8)		
Any Primary care	1,751 (99·7)	1,756 (100·0) *	£3,178 (2,560)	£4,616 (3,011) **
Number of primary care visits, mean (sd)	73.3 (57·8)	107.5 (68·3)		
Any pain drugs	1,699 (96·7)	1,750 (99·7) **	£382 (2,348)	£1,165 (4,349) **
Number of prescriptions, mean (sd)	70.1 (98·6)	104.9 (104·0)		

* < ·05; ** <·01 comparing rates of health care use (using Fisher's exact tests) and mean costs (based on bootstrapping) among patients with PPP vs. no PPP; PPP=persistent postoperative pain.

When costs estimates were extended to five and ten-years following the index lumbar surgery, among patients with sufficient follow up data for each period, the difference in costs between patients with and without PPP increased. In total over five years following surgery, patients with PPP (n=894 cases) cost an additional mean of £10,195 [95% CI: 8,726 to 11,669], rising to a total mean cost differential of £14,318 [95% CI: 8,386 to 19,771] over 10 years (n=186 cases). Note that the difference may have been

underestimated for patients who underwent surgery prior to the release of the HES outpatient files in 2003/04.

Table 3: Total 2-year costs (2013 British Pounds), cases (PPP) versus propensity score matched control cohort (no PPP)

	No PPP (N=1, 756) Mean (sd)	PPP (N=1, 756) Mean (sd)	Difference	[95% CIs]
Inpatient	£1,651 (3,537)	£4,152 (5,160)	£2,501	[2,202-2,811]
Outpatient attendances	£673 (944)	£1,204 (1,159)	£531	[456-604]
Outpatient procedures	£134 (469)	£221 (593)	£87	[51-121]
Accidents & emergency	£48 (130)	£73 (163)	£25	[15-35]
Primary care	£3,169 (2,562)	£4,616 (3,011)	£1,447	[1,263-1,661]
Pain medications	£370 (2,310)	£1,161 (4,342)	£791	[574-1,027]
Total costs	£6,044 (6,712)	£11,427 (9,304)	£5,383	[4,872-5,916]

Sensitivity analyses

Estimating the PPP cost differential with generalised linear models (using log link and gamma distribution), extended estimating equations, and ordinary least squares produced very similar results to the main analysis.

DISCUSSION

A total of 10,216 adults identified within the linked CPRD-HES database underwent lumbar spinal surgery between 1997/98 and 2011/12, with the rate of individuals receiving surgery approximately doubling over this time period. Using the criteria of additional lumbar surgery within 6-24 months, pain-related physician visits over at least two consecutive quarters

within the same period, or other surgical intervention therapy at any time, we estimate that approximately one in five (20.8%; 95% CI: 18.5% to 23.0%) lumbar spine surgery patients in the UK experience persistent post-operative pain within two years of their index surgery. The costs of PPP patients over 10 years following lumbar surgery were more than 50% higher compared to those patients without ongoing pain.

Our estimate of PPP was conservative in that we did not include patients who had ongoing prescriptions for analgesic pain medications in the absence of other more rigorous indicators of back pain. If we had included any prescribing of pain medication, our estimate of post-lumbar surgery PPP incidence would have risen from 20.8% to 61.8%.

Strengths and limitations of this study

This study used routinely captured hospital and primary care data to investigate diagnoses and treatment patterns on a population sample of lumbar surgery patients. Hence, our observations are based on patterns of care for a large and representative group of patients undergoing treatment in real world settings. This enabled us to calculate more precise estimates of PPP following lumbar surgery; previous studies have relied on multiple assumptions regarding treatment patterns or on randomised controlled clinical trial data with small, non-representative patient samples.

A limitation of using electronic medical records data is the classification of patients with PPP. There is a no specific diagnosis code or set of codes for the condition of PPP. Instead, our estimates are based upon presentation for further interventions, surgery and/or attendance at specialist pain clinics. The data do not contain information on pain scores commonly used to assess the existence and severity of chronic pain following recovery from surgery. Evidence on the persistence of pain for a period of at least six

months in the year following surgery was, by necessity, inferred from data on receipt of therapies for chronic pain, referrals to pain specialists, etc. It is possible that some patients who had a successful outcome of back surgery experienced ongoing concurrent or new onset chronic pain from another source and were misclassified as having post-lumbar PPP.

Implications of our findings for policy and/or practice

Our findings are based on a broadly representative sample of the UK population undergoing lumber surgery. The mid-2012 population estimate of adults in the UK was 50.2 million.[28] Based on our estimates of lumbar surgery, we would predict that approximately 23,592 patients underwent initial lumbar surgery in the UK at the end of our study period. This equates to 4,907 adults (20.8%) with PPP following lumbar surgery annually in the UK and that the associated short term (2-year) costs of caring for PPP amount to approximately £26.4 million for each new annual cohort of PPP patients. Extending our horizon to cover 10 years following index surgery, we would predict that each new annual cohort of lumbar surgery patients experiencing PPP could cost the NHS approximately £70.3 million over the first decade, with costs likely to continue accumulating over the remainder of the lifespan of members of that cohort.

Despite these large and ongoing costs, no formal guidelines to date have been put forward for the treatment of persistent pain after lumbar surgery. Our findings for patients with available follow-up data for two, five and ten years postoperatively suggest that PPP patients have significantly higher resource utilisation and that these costs continue for at least a decade following index surgery. Although our data contained too few patients with more than 10 years of follow up to extend our estimates beyond the initial decade, it is likely that the PPP cost differential persists into the long term particularly as patients' age.

Our 10 year estimate is a censored estimate of the total lifetime cost of managing these patients.

The growth in rates of lumbar surgery suggests that the numbers of patients living with ongoing pain in the UK is substantial and growing. In addition to the NHS cost burden, we know from other studies that these patients experience significant reduction in health-related quality of life. For example, in the PROCESS study, mean baseline EQ5D index score among lumbar surgery patients with ongoing pain was 0.14,[29] which is much lower than has been documented for other patient populations with chronic diseases, including cancer.[30] There is a need for a coherent management strategy for primary care staff, pain specialists and surgeons to offer to these patients. High quality primary studies are urgently required to provide more understanding of the treatment and recovery trajectory of this patient group.

CONCLUSION

Utilising routinely-collected clinical data, this study shows that approximately one-in-five lumbar spine surgery patients in the UK experience PPP (also known as, 'failed back surgery syndrome'). PPP is associated with higher rates of resource utilisation and with increased intensity of resource use in the inpatient, outpatient, and primary care settings. The costs to the NHS of treating patients with PPP are substantive and remain elevated over time, highlighting the need for formalized national guidelines for the management of patients with lumbar pain pre- and post-surgery.

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Contributors: SE, AM, RST and SW conceived and designed the study originally; JB and DC joined the study team part way through the analysis planning phase and helped to shape the final study design. SW acquired the data. CNC, TCK, MS, TT and SW developed the analysis plan. TCK, MS and SW analysed the data. SW drafted the manuscript. JB, DC, SE, TCK, AM, MS, RST, TT and SW revised the manuscript. All authors contributed intellectually to the interpretation of the data, participated in manuscript development and approved the final version. SW is the guarantor.

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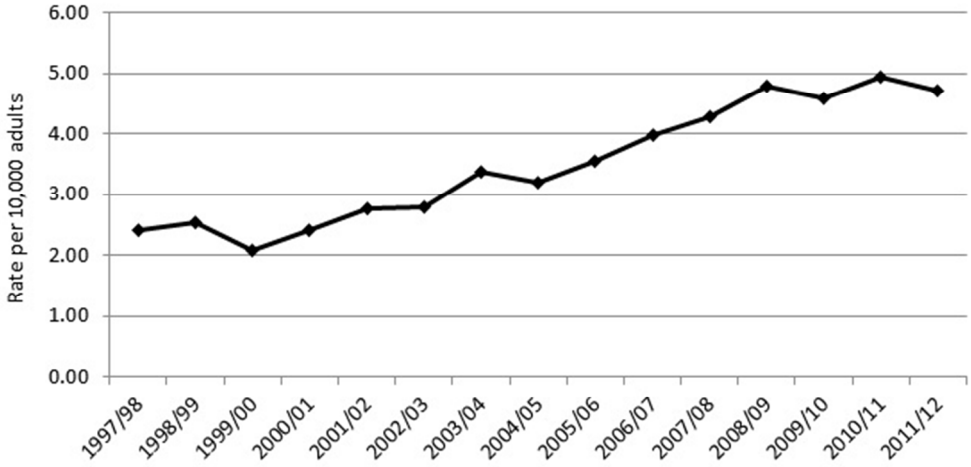

Figure 1: Age- and sex-adjusted incidence of lumbar surgery in linked CPRD-HES, trend in rates per 10,000 adults

172x87mm (96 x 96 DPI)

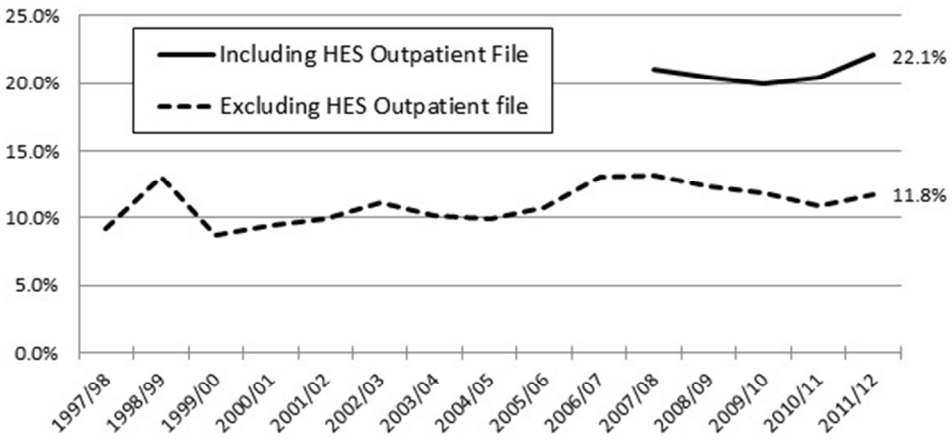

Figure 2: Percentage of patients with persistent postoperative pain (PPP) by year of index lumbar surgery

161x82mm (96 x 96 DPI)

Online Supplementary Material

Description of the databases

Hospital Episode Statistic—The Health and Social Care Information Centre (HSCIC) now NHS Digital, is the national body for mandatory data collection from all hospitals in England. Data are captured regardless of payer status (e.g., private or government) or geographic residency of the patient.[1]

Clinical Practice Research Datalink—CPRD has records for about 5.5 million currently registered patients and approximately 13 million patients 'ever' registered. These data are collected from approximately 590 general practices and cover 8% of the UK population. The patient population captured in the CPRD has been shown to be broadly representative of the demographic breakdown of the UK population and the quality and completeness of the data have been well-documented.[2–7] These data have been used to answer a wide range of health care quality and resource utilisation questions, including studies of neuropathic pain.[8–11] Linkage to HES is possible for approximately half of patients in CPRD-registered practices.

Detailed methods for calculating costs of care by encounter type

Primary care: Primary care was grouped into major types of consultation as in previous studies.[12–18] This included clinical consultations, surgery visits, telephone consultations, out of hour visits, administrative visits and other. The category 'other' included encounters as 'repeat issue' or 'third party consultation'. We created separate indicators for each category. Unit costs associated with these 6 categories were assigned to each unique consultation from UK national average estimates produced by the Personal Social Services Research Unit.[19]

Outpatient attendances and procedures: HES outpatient data were available from 2003/04 onwards. However, the outpatient data tables were not accredited as a National Statistic prior to 2008.[1] We distinguished between regular outpatient attendances and outpatient attendances that included an interventional procedure. Unit costs for both types of attendance were taken from the NHS 'Reference Costs' publication[20] and were assigned by treatment specialty and by first versus follow-up visit.

Inpatient care: Stays in the HES inpatient dataset were classified as elective inpatient stays, long (>1 day) non-elective inpatient stays, short non-elective inpatient stays, day cases and regular day or night admissions. To allow costs to vary with clinical complexity of the patient, stays were grouped by NHS Healthcare Resource Groups, using the HRG4+ 2012-13 Reference Costs Grouper software[21] before applying reference costs for each stay category from the national schedule.[20] This was preferred over costing by simple per diem unit costs multiplied by number of inpatient days, which treats all inpatient encounters as equal in intensity of resources used. The HRG grouping approach allows for the inclusion of costs associated with excess bed days. Costs for cases that were not assigned to an HRG (13.4%) were estimated using the average cost by type of service. Total inpatient costs were obtained by aggregating across subcategories of inpatient care.

Accident & Emergency (A&E): Both CPRD and HES datasets contain information about A&E attendances for patients who were referred to the emergency department or who self-referred and were subsequently admitted to the hospital. A&E attendances were costed using the NHS reference costs.[20] and varied depending on whether attendance resulted in an inpatient admission.

Pain medications: We used the same set of prescription drug codes for pain-related analgesia, including opioids, non-steroidal anti-inflammatory drugs or NSAIDs, selected antidepressants with analgesic properties, anticonvulsant/antiepileptic drugs used for pain, and other analgesic therapies. The selected list was informed by a published randomized controlled trial of spinal cord stimulation for treatment of PPP following lumbar surgery.[22,23] We amended the list to add all new analgesic medications marketed in the intervening period. Each medication was costed by strength and formulation/route assigning corresponding unit costs from the British National Formulary[24] and multiplying by the quantity prescribed using the a methodology similar to that employed in the economic analysis of the PROCESS trial.[25]

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Unit Costs (2013 British Pounds**)**

Table A. Unit costs of primary care

Type of consultation	Unit cost
Clinic	£66
Telephone	£27
Out of hours /night visits/at home/emergency	£114
Administrative	£27
Surgery	£45
Other	£66

Source: Curtis L. Unit Costs of Health and Social Care 2013. Canterbury, Personal Social Services Research Unit, Kent, 2013.

Table B. Unit costs of outpatient attendances

Treatment specialty code[1]	First or follow up attendance	Unit cost
100	1	117.83
100	2	112.91
101	1	106.53
101	2	77.71
102	1	371.32
102	2	338.77
103	1	129.79
103	2	100.75
104	1	123.48
104	2	142.34
105	1	218.97
105	2	153.76
106	1	120.58
106	2	108.09
107	1	236.32
107	2	139.81
108	1	198.73
108	2	198.73
110	1	107.04
110	2	70.16
120	1	96.54
120	2	83.51
130	1	163.94
130	2	75.16
140	1	124.67
140	2	100.81
141	1	170.57
141	2	93.64
142	1	159.98
142	2	95.71
143	1	156.19
143	2	106.51
144	1	111.03

144	2	117.49
145	1	198.73
145	2	198.73
148	1	198.73
150	1	194.55
150	2	135.68
160	1	99.24
160	2	62.93
161	1	265.93
161	2	211.68
170	1	308.85
170	2	304.11
171	1	4746.99
171	2	154.56
172	1	292.12
172	2	207.78
173	1	251.25
173	2	215.31
174	1	499.54
174	2	334.03
180	1	183.25
180	2	240.18
190	1	75.88
190	2	69.3
191	1	126.7
191	2	98.88
192	1	1564.27
192	2	105.87
199	1	198.73
199	2	198.73
211	1	242.18
211	2	114.72
214	1	142.05
214	2	118.04
215	1	114.82
215	2	101.02
216	1	134.6
216	2	129.33
217	1	378.76
217	2	320.99
218	2	182.7
219	1	154.25
219	2	99.17
222	1	134.98
251	1	148.27

251	2	109.13
252	1	808.96
252	2	206.14
253	1	225.36
253	2	202.28
255	1	158.35
255	2	152.29
257	1	122.58
257	2	81.29
258	1	172.74
258	2	123.73
263	1	263.09
263	2	187.77
290	1	198.73
290	2	198.73
291	1	634.2
300	1	146.55
300	2	96.03
301	1	124.89
301	2	101.07
302	1	168.86
302	2	110.76
303	1	165.82
303	2	126.05
304	1	53.89
304	2	50.71
305	1	145.79
305	2	150.83
306	1	190.9
306	2	173.07
307	1	200.18
307	2	94.83
308	1	238.45
308	2	255.3
309	1	525.32
309	2	832.36
310	1	75.62
310	2	67.67
311	1	425.08
311	2	292.45
313	1	137.1
313	2	118.89
314	1	367.82
314	2	130.29
315	1	179.78

315	2	142.69
316	1	245.45
316	2	138.43
317	1	159.7
317	2	140.63
318	1	198.73
318	2	198.73
320	1	137.09
320	2	114.01
321	1	302.22
321	2	134.05
322	1	88.47
322	2	98.32
323	1	331.36
323	2	266.46
324	1	39.54
324	2	21.44
325	2	117.1
327	1	108.22
327	2	49.75
328	1	170.91
328	2	143.91
329	1	202.33
329	2	155.29
330	1	82.13
330	2	76.69
340	1	206.8
340	2	127.15
341	1	84.75
341	2	90.78
342	1	87.71
342	2	60.6
343	2	228.07
350	1	136.93
350	2	166.5
352	1	277.91
352	2	327.81
360	1	93.15
360	2	67.16
361	1	2206.91
361	2	138.42
370	1	112.27
370	2	96.08
371	1	122.12
371	2	686.83

400	1	188.02
400	2	131.33
401	1	425.93
401	2	160.19
410	1	155.13
410	2	110.46
420	1	134.13
420	2	135.54
421	1	567.67
421	2	389.2
422	2	191.85
430	1	212.26
430	2	185.11
450	1	195.36
450	2	121.81
460	1	167.95
460	2	166.26
499	1	198.73
499	2	198.73
501	1	110.93
501	2	89.39
502	1	117.31
502	2	93.87
503	1	229.88
503	2	231.8
560	1	75.7
560	2	66.44
600	1	198.73
620	1	198.73
650	1	54.95
650	2	41.56
651	1	84.46
651	2	71.15
652	1	78.15
652	2	51.01
653	1	66.4
653	2	61.9
654	1	73.24
654	2	74.03
655	1	53.07
655	2	54.2
656	1	169.03
656	2	120.2
657	2	198.73
658	1	198.73

658	2	198.73
662	1	62.65
662	2	63.94
700	1	198.73
700	2	198.73
710	1	226.27
710	2	129.04
711	1	529.63
711	2	267.51
712	1	198.73
712	2	198.73
713	1	232.48
713	2	456.92
715	1	8.92
715	2	198.73
721	1	198.73
721	2	198.73
722	1	90.12
722	2	136.53
800	1	130.99
800	2	92.94
810	1	198.73
810	2	198.73
811	1	119.98
811	2	403.02
812	1	61.26
812	2	30.97
820	1	198.73
820	2	198.73
822	1	80.6
822	2	73.21
823	1	198.73
823	2	198.73
824	1	198.73
830	1	198.73
830	2	198.73
831	1	198.73
831	2	198.73
840	1	82.99
840	2	70.27
900	1	198.73
900	2	198.73
901	1	198.73
901	2	198.73
902	1	198.73

902	2	198.73
904	1	198.73
904	2	198.73
950	1	198.73
950	2	198.73
960	1	198.73
960	2	198.73

Source: Department of Health. Reference Costs 2012-13. Available online: https://www.gov.uk/government/publications/nhs-reference-costs-2012-to-2013.
Note(1): For a description for specialty codes see: https://www.gov.uk/government/collections/nhs-reference-costs.

Table C. Unit costs of outpatient procedures

Treatment specialty code[1]	First or follow up attendance	Unit Cost
100	1	$207.24
100	2	$207.24
101	1	$149.80
101	2	$149.80
102	1	$316.02
102	2	$316.02
103	1	$183.41
103	2	$183.41
104	1	$173.56
104	2	$173.56
105	1	$253.18
105	2	$253.18
106	1	$152.52
106	2	$152.52
107	1	$168.42
107	2	$168.42
110	1	$150.11
110	2	$150.11
120	1	$143.16
120	2	$143.16
130	1	$132.29
130	2	$132.29
140	1	$202.87
140	2	$202.87
141	1	$182.03
141	2	$182.03
143	1	$146.28
143	2	$146.28
144	1	$174.41
144	2	$174.41
150	1	$202.90
150	2	$202.90
160	1	$138.64
160	2	$138.64
161	2	$171.23
170	1	$198.98
170	2	$198.98
172	1	$208.25
172	2	$208.25
173	1	$260.51
173	2	$260.51
174	2	$468.09
180	1	$137.83

180	2	$137.83
190	1	$100.33
190	2	$100.33
191	1	$137.73
191	2	$137.73
211	2	$82.55
214	1	$117.67
214	2	$117.67
215	1	$128.13
215	2	$128.13
216	1	$163.31
216	2	$163.31
219	1	$115.64
252	2	$387.87
253	2	$229.43
255	1	$190.98
255	2	$190.98
257	1	$113.60
257	2	$113.60
258	1	$139.67
258	2	$139.67
263	2	$389.56
300	1	$201.64
300	2	$201.64
301	1	$213.32
301	2	$213.32
302	1	$201.80
302	2	$201.80
303	1	$191.08
303	2	$191.08
304	1	$87.00
304	2	$87.00
306	1	$279.18
306	2	$279.18
307	1	$184.33
307	2	$184.33
308	1	$3,808.25
308	2	$3,808.25
310	1	$199.79
310	2	$199.79
311	2	$312.55
313	1	$129.23
313	2	$129.23
314	1	$310.94
314	2	$310.94

315	1	$218.81
316	1	$238.93
316	2	$238.93
317	1	$201.90
317	2	$201.90
320	1	$161.38
320	2	$161.38
321	1	$217.81
323	1	$202.51
323	2	$202.51
324	1	$75.75
324	2	$75.75
327	1	$254.11
327	2	$254.11
328	1	$274.25
328	2	$274.25
329	1	$151.74
329	2	$151.74
330	1	$144.10
330	2	$144.10
340	1	$183.78
340	2	$183.78
341	1	$129.66
341	2	$129.66
342	1	$133.03
342	2	$133.03
350	1	$220.19
350	2	$220.19
352	1	$321.96
360	1	$255.02
360	2	$255.02
361	1	$714.11
361	2	$714.11
370	1	$216.20
370	2	$216.20
371	2	$145.89
400	1	$227.56
400	2	$227.56
401	1	$168.22
401	2	$168.22
410	1	$155.89
410	2	$155.89
420	1	$204.63
420	2	$204.63
430	1	$225.07

430	2	$225.07
450	1	$248.44
450	2	$248.44
460	1	$135.57
460	2	$135.57
501	1	$169.90
501	2	$169.90
502	1	$209.90
502	2	$209.90
503	1	$171.64
503	2	$171.64
560	1	$137.23
560	2	$137.23
650	1	$204.29
650	2	$204.29
651	1	$390.57
651	2	$390.57
652	1	$278.72
652	2	$278.72
653	1	$298.24
653	2	$298.24
654	1	$535.00
654	2	$535.00
655	1	$141.38
655	2	$141.38
656	1	$116.18
656	2	$116.18
662	1	$101.20
662	2	$101.20
710	1	$739.15
710	2	$739.15
713	1	$96.61
800	1	$240.80
800	2	$240.80
811	1	$487.37
811	2	$487.37
812	1	$176.07
812	2	$176.07
822	1	$51.08
822	2	$51.08
840	1	$232.49
840	2	$232.49

Source: Department of Health. Reference Costs 2012-13. Available online: https://www.gov.uk/government/publications/nhs-reference-costs-2012-to-2013.
Note(1): For a description for specialty codes, see: https://www.gov.uk/government/collections/nhs-reference-costs.

Table D. Inpatient unit costs by HRG

FCE_HRG	Unit Cost
AA02C	£13,543.69
AA02D	£9,098.19
AA02E	£14,942.99
AA03C	£10,996.12
AA03D	£5,129.92
AA04C	£16,033.24
AA05D	£8,433.21
AA06C	£17,411.32
AA06E	£8,824.69
AA06F	£8,115.05
AA07C	£13,079.18
AA07D	£14,303.06
AA08C	£6,390.61
AA08D	£7,680.18
AA09C	£14,803.38
AA09D	£7,495.31
AA09E	£6,550.19
AA10Z	£7,587.79
AA11Z	£11,682.94
AA12C	£3,837.17
AA12D	£8,361.61
AA12E	£6,777.98
AA13C	£9,904.20
AA13D	£7,445.59
AA14Z	£4,991.88
AA15C	£10,826.07
AA15D	£8,081.22
AA15E	£7,780.20
AA16Z	£16,019.03
AA17C	£13,293.07
AA17D	£10,625.08
AA18C	£7,801.23
AA18D	£5,120.91
AA19D	£430.38
AA19E	£4,908.06
AA20C	£5,435.30
AA20D	£1,500.60
AA21C	£3,978.43
AA21D	£7,093.43
AA21E	£807.06
AA21F	£5,543.01
AA21G	£869.99
AA22C	£7,390.09

AA22D	£4,932.54
AA22E	£4,022.77
AA22F	£2,315.96
AA22G	£2,302.17
AA23D	£5,085.44
AA23E	£3,408.37
AA23F	£3,091.88
AA23G	£759.46
AA24C	£5,670.86
AA24D	£4,219.40
AA24E	£564.33
AA24F	£2,785.07
AA24G	£2,394.94
AA24H	£619.48
AA25C	£6,997.51
AA25D	£4,458.37
AA25E	£3,208.93
AA25F	£507.84
AA25G	£509.60
AA26C	£6,545.97
AA26D	£4,241.63
AA26E	£2,871.27
AA26F	£496.75
AA26G	£488.50
AA26H	£432.32
AA27Z	£4,322.88
AA28C	£5,714.13
AA28D	£450.69
AA28E	£2,395.84
AA28F	£1,821.09
AA29C	£2,966.01
AA29D	£1,979.55
AA29E	£1,538.58
AA29F	£508.78
AA30C	£3,103.55
AA30D	£2,218.05
AA30E	£2,673.24
AA30F	£2,177.01
AA31C	£1,981.18
AA31D	£2,978.14
AA31E	£1,115.47
AA32Z	£328.94
AA33C	£537.33
AA34C	£1,432.92
AA34D	£1,405.95

AA35A	£10,431.32
AA35B	£11,333.42
AA35C	£5,727.76
AA35D	£4,024.58
AA35E	£3,123.14
AA35F	£2,757.17
AA37Z	£5,109.45
AA38Z	£15,151.50
AB02Z	£904.97
AB03Z	£827.35
AB04Z	£704.04
AB05Z	£570.44
AB06Z	£619.59
AB07Z	£11,122.03
AB08Z	£667.16
AB09Z	£575.49
AB10Z	£508.69
AB11Z	£155.77
BZ01A	£1,124.52
BZ01B	£1,109.53
BZ02A	£1,574.51
BZ02B	£887.91
BZ02C	£865.82
BZ03A	£1,006.92
BZ03B	£981.66
BZ04A	£323.46
BZ04B	£262.68
BZ05A	£2,445.85
BZ05B	£3,059.31
BZ06B	£2,069.08
BZ06C	£1,088.93
BZ06D	£970.28
BZ07B	£918.10
BZ07C	£5,370.68
BZ07D	£793.54
BZ07E	£676.73
BZ08C	£4,056.93
BZ08D	£2,845.03
BZ09C	£1,388.89
BZ09D	£1,387.95
BZ10C	£658.41
BZ10D	£614.48
BZ11A	£5,105.46
BZ11B	£2,473.14
BZ12A	£2,645.63

BZ12B	£2,394.69
BZ13A	£1,969.42
BZ13B	£952.30
BZ14A	£1,573.42
BZ15C	£1,335.33
BZ15D	£1,273.00
BZ16A	£1,216.46
BZ17A	£1,592.26
BZ17B	£2,275.41
BZ18A	£1,077.58
BZ18B	£1,139.77
BZ19A	£609.27
BZ19B	£403.55
BZ20A	£2,323.62
BZ20B	£2,270.07
BZ21A	£3,286.41
BZ21B	£2,128.24
BZ21C	£2,089.76
BZ22A	£989.08
BZ22B	£4,276.26
BZ23Z	£1,380.31
BZ24D	£2,960.73
BZ24E	£2,491.24
BZ24F	£396.58
BZ24G	£363.46
CZ01V	£3,310.76
CZ01Y	£1,713.06
CZ02T	£2,074.72
CZ02W	£841.34
CZ02X	£1,726.61
CZ02Y	£620.22
CZ03V	£3,325.97
CZ03Y	£2,926.86
CZ04P	£13,947.08
CZ04Q	£10,048.87
CZ05S	£1,700.15
CZ05T	£1,481.12
CZ05V	£1,607.39
CZ05Y	£1,154.04
CZ07O	£9,572.39
CZ07P	£5,920.08
CZ07Q	£6,080.67
CZ08S	£960.16
CZ08T	£847.88
CZ08V	£772.64

CZ08Y	£740.72
CZ09U	£2,774.15
CZ09V	£2,550.10
CZ09Y	£1,040.91
CZ10U	£2,990.26
CZ10V	£2,952.58
CZ10Y	£2,917.72
CZ11Z	£5,538.98
CZ12U	£770.65
CZ12V	£1,494.26
CZ12Y	£627.38
CZ13U	£1,679.89
CZ13V	£1,821.94
CZ13Y	£1,232.52
CZ14U	£2,684.40
CZ14V	£2,324.79
CZ14Y	£2,308.36
CZ15N	£3,253.82
CZ15Q	£3,323.56
CZ16N	£2,121.04
CZ16Q	£2,098.25
CZ17U	£3,631.39
CZ17V	£4,167.67
CZ17Y	£1,076.59
CZ18R	£5,276.95
CZ19Z	£8,743.50
CZ21V	£1,211.53
CZ21Y	£450.63
CZ22W	£2,042.00
CZ22X	£475.68
CZ22Y	£490.02
CZ23W	£2,767.72
CZ23X	£425.39
CZ23Y	£462.17
CZ24O	£5,062.41
CZ24P	£1,839.99
CZ24Q	£1,682.02
CZ25A	£21,234.63
CZ27Z	£2,883.18
CZ28Z	£3,854.04
CZ30Y	£406.03
CZ31Y	£394.31
CZ32Y	£505.20
CZ33Y	£534.06
CZ34Y	£444.10

CZ37U	£863.39
CZ37Y	£533.18
CZ38Y	£358.12
CZ39U	£1,005.08
CZ39Y	£818.58
CZ40Y	£681.47
CZ41U	£935.45
CZ41Y	£771.78
CZ42U	£698.00
CZ42Y	£1,720.18
DZ02D	£11,314.15
DZ02E	£8,231.01
DZ02F	£6,988.70
DZ02G	£6,230.44
DZ06Z	£972.56
DZ07A	£630.26
DZ07B	£1,358.95
DZ08Z	£1,220.91
DZ09D	£4,418.94
DZ09E	£3,223.47
DZ09F	£2,491.66
DZ09G	£1,940.38
DZ09H	£464.93
DZ10E	£5,451.32
DZ10F	£608.73
DZ10G	£502.65
DZ11D	£5,484.90
DZ11E	£4,135.26
DZ11F	£4,218.80
DZ11G	£2,315.80
DZ11H	£484.40
DZ11J	£1,374.20
DZ12C	£486.49
DZ12D	£468.78
DZ12E	£2,166.80
DZ12F	£2,073.32
DZ13A	£0.00
DZ13B	£0.00
DZ14C	£4,061.79
DZ14D	£3,188.14
DZ14E	£568.87
DZ15G	£1,596.80
DZ15H	£2,522.95
DZ15J	£1,804.60
DZ15K	£435.23

DZ15L	£413.76
DZ16E	£3,000.27
DZ16F	£514.36
DZ16G	£1,765.57
DZ17E	£4,098.24
DZ17F	£3,183.93
DZ17G	£2,680.99
DZ17H	£502.54
DZ17J	£1,599.15
DZ17K	£586.05
DZ18B	£751.07
DZ18C	£700.20
DZ19D	£446.58
DZ19E	£1,610.16
DZ19F	£431.65
DZ19G	£408.33
DZ20A	£3,002.65
DZ20B	£490.85
DZ20C	£1,664.30
DZ21A	£427.38
DZ21M	£3,374.69
DZ21N	£2,305.75
DZ21P	£2,015.09
DZ21Q	£692.34
DZ21R	£2,993.25
DZ21S	£606.43
DZ21T	£505.73
DZ21U	£1,459.17
DZ22D	£4,803.90
DZ22E	£3,418.05
DZ22F	£2,486.32
DZ22G	£469.13
DZ22H	£1,450.76
DZ22J	£391.85
DZ23E	£3,226.48
DZ23F	£2,174.92
DZ23G	£1,625.01
DZ24D	£5,787.51
DZ24E	£4,282.12
DZ24F	£3,140.59
DZ24G	£578.16
DZ24H	£450.46
DZ25C	£3,095.55
DZ25D	£509.53
DZ25E	£519.49

DZ25F	£581.11
DZ26C	£3,795.37
DZ26D	£2,187.89
DZ26E	£1,930.52
DZ26F	£462.29
DZ27G	£3,251.14
DZ27H	£3,887.07
DZ27J	£2,806.15
DZ27K	£1,097.13
DZ27L	£1,620.63
DZ28A	£393.83
DZ28B	£964.57
DZ29C	£5,647.22
DZ29D	£2,140.23
DZ29E	£2,146.28
DZ29F	£1,890.68
DZ30Z	£400.44
DZ37A	£1,211.51
DZ38Z	£338.22
DZ39Z	£0.00
DZ40Z	£582.91
DZ44Z	£738.51
DZ49Z	£114.14
DZ50Z	£675.07
DZ51Z	£19,257.08
DZ53A	£7,648.90
DZ53B	£5,152.55
DZ53C	£4,134.64
DZ53D	£1,011.87
DZ53E	£3,512.05
DZ53F	£3,377.67
DZ54Z	£2,950.88
EA02Z	£46,293.95
EA03A	£1,418.75
EA03B	£5,610.75
EA03C	£1,964.40
EA03D	£1,844.97
EA03E	£2,659.07
EA05A	£7,438.96
EA05B	£5,095.11
EA05C	£2,177.15
EA05D	£1,994.17
EA07B	£4,846.77
EA07C	£5,096.04
EA11B	£1,630.04

EA12B	£14,777.82
EA12C	£14,528.01
EA12D	£13,905.13
EA14A	£14,538.70
EA14B	£10,487.59
EA14C	£8,991.28
EA14D	£8,622.56
EA16A	£12,763.86
EA16B	£10,687.50
EA16C	£9,983.10
EA16D	£9,172.70
EA17A	£13,173.21
EA17B	£11,208.21
EA17C	£9,696.82
EA17D	£467.44
EA19B	£11,722.26
EA19C	£10,750.08
EA20A	£18,302.57
EA20B	£12,150.96
EA20C	£9,542.71
EA22Z	£13,738.01
EA29A	£5,904.41
EA29B	£5,025.82
EA29C	£2,820.75
EA31A	£7,214.31
EA31B	£2,192.49
EA31C	£3,237.70
EA31D	£1,970.40
EA35A	£5,597.66
EA35B	£3,896.24
EA35C	£1,462.02
EA35D	£1,617.66
EA36D	£5,695.43
EA36E	£1,128.29
EA36F	£2,325.68
EA36G	£1,038.78
EA36H	£1,618.88
EA39A	£6,794.69
EA39B	£1,992.40
EA39C	£4,177.28
EA40Z	£1,085.85
EA44A	£798.64
EA44B	£824.66
EA45Z	£718.96
EA47Z	£1,353.19

EA48Z	£3,167.03
EA49A	£7,769.81
EA49B	£5,196.60
EA49C	£2,980.40
EA49D	£2,435.71
EA51A	£15,158.11
EA51B	£12,797.00
EA51C	£11,391.21
EA51D	£10,836.08
EA52A	£18,634.08
EA52B	£13,979.79
EA52C	£12,498.92
EA53Z	£15,953.72
EA54A	£3,227.00
EA54B	£3,128.34
EA55B	£1,789.23
EA56A	£18,143.90
EA56B	£16,681.16
EA56C	£14,173.03
EA57A	£6,310.53
EB02B	£3,914.06
EB02C	£805.79
EB03A	£4,509.35
EB03B	£3,676.84
EB03C	£506.59
EB03D	£2,668.50
EB03E	£1,875.30
EB04Z	£463.66
EB05A	£2,874.35
EB05B	£2,184.22
EB05C	£1,528.41
EB06A	£4,298.50
EB06B	£3,799.20
EB06C	£2,859.23
EB06D	£537.84
EB07A	£3,670.91
EB07B	£617.13
EB07C	£1,829.87
EB07D	£501.89
EB07E	£805.06
EB08A	£3,016.30
EB08B	£2,126.28
EB08C	£1,691.46
EB08D	£436.89
EB08E	£405.77

EB09A	£3,729.99
EB09B	£1,837.16
EB10B	£2,974.30
EB10C	£2,294.84
EB10D	£1,886.80
EB10E	£1,555.21
EB12A	£1,719.22
EB12B	£443.72
EB12C	£1,036.67
EB13A	£1,422.71
EB13B	£1,773.75
EB13C	£464.16
EB13D	£1,091.92
EB14A	£4,443.94
EB14B	£3,312.24
EB14C	£2,524.94
EB14D	£1,935.82
EB14E	£539.63
EB15B	£2,589.81
EB15C	£1,941.99
EC01A	£2,098.70
EC01B	£2,588.05
EC02A	£7,984.42
FZ12L	£9,926.15
FZ12M	£6,904.52
FZ12N	£1,531.42
FZ12P	£4,318.22
FZ12Q	£3,657.44
FZ12S	£4,580.50
FZ13C	£852.44
FZ13D	£1,870.37
FZ17E	£4,799.16
FZ17F	£3,478.78
FZ17G	£2,815.51
FZ18E	£1,315.66
FZ18G	£4,801.34
FZ18H	£1,475.10
FZ18J	£2,118.05
FZ18K	£1,957.43
FZ19A	£1,765.75
FZ20F	£5,792.05
FZ20G	£4,027.75
FZ20H	£3,110.30
FZ20J	£2,762.36
FZ20M	£2,928.55

FZ21C	£1,325.98
FZ21D	£1,890.25
FZ22B	£1,847.29
FZ22C	£3,143.31
FZ22D	£1,907.46
FZ22E	£1,428.31
FZ23A	£1,230.76
FZ23B	£843.25
FZ24G	£622.64
FZ24H	£758.74
FZ24J	£614.50
FZ27E	£5,649.44
FZ27F	£3,727.83
FZ27G	£2,464.19
FZ36G	£7,347.12
FZ36J	£5,089.85
FZ36K	£3,294.86
FZ36L	£2,265.82
FZ36M	£3,430.86
FZ36N	£496.42
FZ36P	£1,897.11
FZ36Q	£440.45
FZ37K	£8,305.66
FZ37L	£4,449.85
FZ37M	£4,244.10
FZ37N	£2,733.89
FZ37P	£476.43
FZ37Q	£1,871.80
FZ37R	£1,550.46
FZ37S	£1,415.93
FZ38G	£4,785.82
FZ38H	£2,929.46
FZ38J	£3,518.38
FZ38K	£2,505.58
FZ38L	£1,801.76
FZ38M	£2,680.46
FZ38N	£503.89
FZ38P	£448.22
FZ42A	£687.67
FZ49D	£5,744.77
FZ49E	£4,239.22
FZ49G	£496.46
FZ49H	£1,848.83
FZ50Z	£769.19
FZ51Z	£485.95

FZ52Z	£554.48
FZ53Z	£541.81
FZ54Z	£411.68
FZ55Z	£460.93
FZ56Z	£482.70
FZ57Z	£1,166.00
FZ58A	£725.78
FZ59Z	£345.86
FZ60Z	£396.91
FZ61Z	£429.29
FZ62A	£1,688.57
FZ63Z	£561.34
FZ64A	£607.05
FZ65Z	£654.68
FZ66C	£13,932.55
FZ66D	£8,189.81
FZ66E	£3,134.54
FZ66F	£5,589.72
FZ67C	£10,188.49
FZ67D	£6,012.88
FZ67E	£4,500.28
FZ67F	£3,790.60
FZ69C	£19,184.77
FZ70Z	£520.41
FZ71D	£5,958.86
FZ71F	£897.36
FZ71G	£1,603.20
FZ72Z	£2,031.30
FZ73C	£16,930.33
FZ73D	£13,373.95
FZ73E	£13,300.39
FZ73F	£8,743.87
FZ74C	£12,875.23
FZ74D	£9,334.53
FZ74E	£7,989.55
FZ74F	£6,883.99
FZ75C	£8,436.91
FZ75D	£6,312.07
FZ75E	£5,575.42
FZ76C	£6,792.07
FZ76D	£5,430.19
FZ77C	£5,412.39
FZ77D	£4,025.68
FZ77E	£3,485.39
FZ78B	£5,587.18

FZ79D	£9,964.10
FZ79E	£6,512.34
FZ80C	£18,886.63
FZ80D	£12,819.12
FZ80E	£9,764.70
FZ81C	£11,172.73
FZ81D	£8,308.93
FZ81E	£5,911.18
FZ83D	£4,751.89
FZ83H	£2,682.26
FZ83J	£4,204.90
FZ83K	£3,297.37
FZ84Z	£4,899.45
FZ85Z	£3,810.34
FZ87D	£6,128.11
FZ87E	£4,664.11
FZ87F	£3,847.01
FZ87G	£1,569.17
FZ88A	£700.60
FZ89Z	£2,229.68
FZ90A	£2,202.65
FZ90B	£1,318.05
FZ91A	£9,264.93
FZ91B	£6,032.02
FZ91C	£4,359.18
FZ91D	£2,890.07
FZ91E	£4,870.73
FZ91F	£3,450.95
FZ91G	£2,654.40
FZ91H	£2,056.39
FZ91J	£3,710.11
FZ91K	£2,687.17
FZ91L	£1,972.99
FZ91M	£452.22
FZ92A	£7,070.43
FZ92B	£5,711.23
FZ92C	£3,170.67
FZ92D	£4,713.67
FZ92E	£3,257.60
FZ92F	£2,534.24
FZ92G	£3,828.74
FZ92H	£541.51
FZ92J	£2,303.32
FZ92K	£1,943.25
GA01C	£20,422.28

GA03C	£13,933.17
GA03D	£10,037.67
GA03E	£9,194.81
GA04C	£16,609.58
GA04D	£7,471.19
GA05C	£9,309.58
GA05D	£6,948.45
GA06C	£7,033.98
GA06D	£944.47
GA07C	£6,248.27
GA07D	£5,063.49
GA07E	£3,758.99
GA10G	£3,175.90
GA10H	£3,934.88
GA10J	£2,671.09
GA10K	£2,382.68
GA10L	£6,192.54
GA10M	£4,218.23
GA10N	£3,505.81
GA12Z	£30,662.98
GA13A	£3,888.00
GA13B	£2,463.62
GB01C	£9,378.31
GB01D	£6,893.78
GB01E	£1,850.13
GB01F	£4,047.51
GB02D	£7,208.79
GB02E	£5,125.11
GB02F	£1,023.66
GB03C	£5,596.35
GB03D	£859.66
GB03E	£747.26
GB03F	£667.40
GB04D	£560.88
GB05F	£6,752.54
GB05G	£4,733.39
GB05H	£1,695.15
GB06E	£5,439.00
GB06F	£725.33
GB06G	£3,293.42
GB06H	£745.86
GB07Z	£707.32
GB09E	£849.83
GC01C	£5,495.74
GC01D	£3,084.11

GC01E	£580.59
GC01F	£1,918.60
GC12C	£5,930.69
GC12D	£3,897.48
GC12E	£2,851.69
GC12F	£2,931.29
GC12G	£3,100.63
GC12H	£2,465.63
GC12J	£1,990.09
GC12K	£1,349.62
GC17A	£7,854.48
GC17B	£5,758.54
GC17C	£4,004.99
GC17D	£4,066.71
GC17E	£3,565.00
GC17F	£2,682.50
GC17G	£3,152.24
GC17H	£2,479.59
GC17J	£1,931.82
GC17K	£490.50
HA11A	£12,489.07
HA11B	£8,705.32
HA11C	£7,543.60
HA12B	£7,961.26
HA12C	£2,365.05
HA13A	£7,980.41
HA13B	£6,388.99
HA13C	£5,386.68
HA14A	£7,615.80
HA14B	£4,830.20
HA14C	£3,698.78
HA21B	£9,571.84
HA21C	£5,722.80
HA22B	£8,629.92
HA22C	£4,906.88
HA23B	£6,921.55
HA23C	£1,683.05
HA24Z	£6,023.58
HA25B	£5,503.83
HA25C	£1,701.15
HA29Z	£903.09
HA31B	£6,156.89
HA31C	£4,013.69
HA32Z	£5,807.90
HA33Z	£4,246.83

HA34Z	£4,051.73
HA35Z	£1,252.41
HA39Z	£613.35
HA51Z	£1,688.69
HA52Z	£1,774.44
HA53Z	£1,989.39
HA54Z	£1,452.04
HA55Z	£1,546.57
HA56A	£1,434.10
HA56B	£2,107.93
HA61B	£4,889.56
HA61C	£4,082.81
HA62Z	£1,927.10
HA63Z	£1,115.96
HA69Z	£601.95
HA71B	£4,708.05
HA71C	£2,871.56
HA72Z	£2,527.75
HA73B	£1,402.82
HA73C	£948.45
HA79Z	£1,012.81
HA81A	£2,515.47
HA81B	£488.63
HA81C	£503.30
HA83A	£1,705.28
HA83B	£1,116.11
HA83C	£1,058.05
HA91Z	£3,861.39
HA92Z	£3,426.20
HA93Z	£1,495.98
HA94Z	£592.67
HA95Z	£921.30
HA96Z	£652.79
HA97Z	£1,971.17
HA99Z	£4,308.02
HB11A	£10,230.56
HB11B	£6,493.36
HB11C	£6,120.61
HB12A	£8,217.36
HB12B	£6,460.06
HB12C	£5,880.11
HB13Z	£4,333.10
HB14B	£4,932.98
HB14C	£1,262.27
HB15D	£4,462.35

HB15E	£2,583.33
HB15G	£2,606.19
HB16B	£6,806.20
HB16C	£954.36
HB19Z	£729.06
HB21A	£7,765.27
HB21B	£6,165.26
HB21C	£5,674.99
HB22B	£1,477.67
HB22C	£2,931.03
HB23B	£3,140.86
HB23C	£2,470.49
HB24B	£3,892.33
HB24C	£2,321.65
HB25D	£5,498.79
HB25E	£1,334.71
HB25F	£1,325.73
HB29Z	£572.44
HB31Z	£4,248.35
HB32A	£3,246.74
HB32B	£3,917.43
HB33D	£6,825.00
HB33E	£1,525.68
HB33G	£1,535.18
HB34D	£5,381.61
HB34E	£1,301.25
HB35B	£4,704.63
HB35C	£1,238.17
HB39Z	£744.65
HB51Z	£2,799.54
HB52B	£3,442.59
HB52C	£2,892.94
HB53Z	£2,521.75
HB54B	£1,345.17
HB54C	£1,383.40
HB55B	£979.82
HB55C	£1,028.29
HB56B	£4,042.02
HB56C	£1,190.46
HB59Z	£628.28
HB61B	£3,730.08
HB61C	£3,024.80
HB62B	£2,402.86
HB62C	£2,217.49
HB63Z	£2,279.40

HB69Z	£513.97
HB71B	£1,683.20
HB71C	£4,076.43
HB72Z	£1,496.34
HB73Z	£2,235.11
HB79Z	£599.59
HB91Z	£3,177.84
HB99Z	£959.72
HC01A	£14,243.80
HC01B	£7,662.28
HC01C	£6,586.51
HC02D	£14,329.41
HC02E	£6,437.15
HC02F	£5,341.63
HC03D	£4,039.63
HC03E	£5,624.29
HC03F	£4,332.23
HC04D	£7,075.95
HC04E	£4,405.29
HC04F	£3,656.35
HC05D	£9,266.83
HC05E	£6,461.23
HC05F	£841.48
HC06Z	£1,596.98
HC07A	£10,977.94
HC07B	£6,973.66
HC10Z	£402.17
HC11Z	£863.62
HC12Z	£636.73
HC20D	£5,496.59
HC20E	£3,836.73
HC20F	£2,994.39
HC20G	£2,361.26
HC21D	£15,961.04
HC21E	£4,759.89
HC26D	£760.81
HC26E	£695.56
HC26F	£683.46
HC27D	£4,996.22
HC27E	£3,245.03
HC27F	£2,369.57
HC27G	£505.17
HC28D	£10,324.42
HC28E	£7,109.83
HC28F	£4,011.42

HC28G	£3,421.42
HC29A	£441.63
HC29B	£420.45
HC30D	£5,990.65
HC30E	£3,016.77
HC31D	£7,351.68
HC31E	£4,906.91
HC31F	£4,743.18
HC31G	£646.72
HC32D	£533.04
HC32E	£478.69
HC32F	£462.15
HC40A	£21,410.92
HC40B	£15,985.84
HC41A	£8,891.94
HC41B	£7,031.53
HC42Z	£10,543.24
HC43Z	£9,261.06
HD21D	£3,417.26
HD21E	£2,589.77
HD21F	£1,862.62
HD21G	£406.97
HD21H	£1,522.69
HD23D	£6,584.68
HD23E	£544.27
HD23F	£413.08
HD23G	£431.89
HD23H	£424.66
HD23J	£432.54
HD24D	£4,665.17
HD24E	£3,569.75
HD24F	£2,453.16
HD24G	£2,226.71
HD24H	£403.46
HD25D	£643.63
HD25E	£707.35
HD25F	£3,725.69
HD25G	£3,231.34
HD25H	£2,710.61
HD26D	£521.16
HD26E	£2,403.23
HD26F	£458.48
HD26G	£430.37
HD39E	£4,225.92
HD39F	£3,041.80

HD39G	£2,492.79
HD39H	£1,921.15
HD40D	£8,531.13
HD40E	£4,343.94
HD40F	£3,539.32
HD40G	£2,744.69
HD40H	£377.65
HR07A	£5,970.80
HR07B	£7,470.47
HR07C	£8,876.42
HR08A	£5,420.64
HR08B	£6,744.73
HR08C	£10,303.59
HR09A	£5,588.98
HR09B	£7,825.23
HR09C	£15,557.92
JA12D	£5,353.82
JA12E	£3,576.57
JA12F	£2,672.39
JA12G	£4,076.51
JA12H	£2,304.75
JA12J	£1,283.25
JA12K	£497.76
JA12L	£1,294.77
JA13A	£2,487.08
JA13B	£1,797.83
JA13C	£407.72
JA14Z	£8,984.75
JA18Z	£654.24
JA19Z	£609.14
JA20D	£3,599.49
JA20E	£3,125.52
JA20F	£2,900.49
JA21A	£3,884.88
JA21B	£3,423.41
JA24D	£1,365.46
JA24E	£2,480.14
JA24F	£1,288.46
JA25Z	£2,262.30
JA26A	£4,397.62
JA26B	£3,674.96
JA26C	£3,476.29
JA27Z	£6,748.28
JA28Z	£11,072.09
JA30Z	£5,488.31

JB30C	£818.93
JB31A	£34,548.56
JB32A	£4,925.04
JB32B	£4,242.81
JB32C	£2,638.62
JB33A	£10,761.97
JB33B	£3,111.75
JB33C	£493.06
JC40Z	£10,970.68
JC41Z	£5,326.68
JC42A	£1,029.92
JC42B	£986.16
JC43A	£623.84
JC43B	£859.15
JC47A	£48.38
JD07A	£7,618.31
JD07B	£5,453.27
JD07C	£3,609.36
JD07D	£2,491.79
JD07E	£506.50
JD07F	£593.60
JD07G	£3,064.28
JD07H	£2,335.07
JD07J	£1,789.28
JD07K	£1,371.42
KA03C	£2,902.57
KA03D	£2,522.20
KA04B	£5,111.70
KA05C	£576.73
KA05D	£515.58
KA06C	£4,158.03
KA06D	£1,938.75
KA06E	£1,664.03
KA07A	£3,096.36
KA07B	£1,826.34
KA07C	£1,408.13
KA08A	£748.87
KA08B	£487.48
KA08C	£425.15
KA09C	£5,743.92
KA09D	£4,006.02
KA09E	£3,230.69
KB01C	£485.26
KB01D	£426.23
KB01E	£554.32

KB01F	£391.14
KB02G	£2,822.99
KB02H	£463.36
KB02J	£448.44
KB02K	£415.98
KB03C	£3,870.81
KB03D	£2,549.46
KB03E	£2,138.25
KB04Z	£1,958.24
KC04A	£507.03
KC04B	£267.75
KC05G	£4,544.43
KC05H	£4,024.18
KC05J	£3,070.54
KC05K	£2,244.14
KC05L	£462.93
KC05M	£1,062.38
KC05N	£1,305.90
LA02A	£20,798.61
LA03A	£18,205.21
LA04J	£6,115.86
LA04K	£4,428.48
LA04L	£3,268.28
LA04M	£2,125.60
LA04N	£4,874.17
LA04P	£3,495.46
LA04Q	£2,451.10
LA04R	£476.80
LA04S	£447.02
LA05Z	£785.01
LA07H	£5,969.44
LA07J	£4,527.07
LA07K	£3,248.23
LA07L	£3,936.57
LA07M	£548.46
LA07N	£2,227.42
LA07P	£490.22
LA08H	£3,805.42
LA08J	£2,949.90
LA08K	£3,920.89
LA08L	£3,231.83
LA08M	£342.15
LA08N	£300.99
LA08P	£2,137.26
LA09K	£3,184.56

LA09L	£2,469.46
LA09N	£2,843.00
LA09P	£1,797.58
LA09Q	£1,366.99
LA97A	£0.00
LB05E	£3,817.98
LB05F	£3,399.78
LB05G	£2,487.93
LB06J	£4,239.80
LB06K	£3,367.81
LB06L	£2,273.24
LB06M	£2,164.00
LB06N	£4,934.12
LB06P	£3,725.97
LB06Q	£2,341.83
LB06R	£445.60
LB06S	£1,243.65
LB09D	£713.76
LB10C	£6,918.01
LB10D	£5,302.30
LB12Z	£3,377.65
LB13C	£4,286.46
LB13D	£2,654.36
LB13E	£1,062.30
LB13F	£1,815.17
LB14Z	£769.18
LB15E	£487.60
LB16D	£2,930.21
LB16E	£2,186.91
LB16F	£2,130.46
LB16G	£2,546.28
LB16H	£1,804.13
LB16J	£1,514.76
LB16K	£396.56
LB17Z	£288.52
LB18Z	£385.29
LB19C	£3,153.41
LB19D	£2,028.35
LB19E	£2,645.85
LB19F	£347.75
LB19G	£796.40
LB20C	£2,565.35
LB20D	£1,601.59
LB20E	£2,201.68
LB20F	£450.12

LB20G	£1,127.74
LB21A	£5,469.42
LB21B	£5,236.04
LB22Z	£5,594.58
LB25D	£3,676.54
LB25E	£2,644.44
LB25F	£2,393.78
LB26A	£1,958.34
LB26B	£1,670.04
LB27Z	£586.81
LB28C	£2,160.84
LB28D	£1,401.77
LB28E	£2,657.64
LB28F	£458.42
LB28G	£1,305.66
LB29A	£3,861.40
LB33Z	£773.42
LB35C	£3,050.63
LB35D	£2,607.77
LB35E	£564.74
LB35F	£1,686.33
LB35G	£1,455.92
LB35H	£1,279.58
LB36Z	£506.12
LB37C	£2,070.92
LB37D	£422.65
LB37E	£385.23
LB38D	£2,104.76
LB38E	£1,609.14
LB38F	£472.22
LB38G	£1,665.80
LB38H	£324.41
LB39C	£10,837.55
LB39D	£9,429.91
LB40C	£2,743.54
LB40D	£1,964.20
LB40F	£1,450.39
LB40G	£465.77
LB42A	£428.18
LB43Z	£359.26
LB46Z	£6,952.52
LB47Z	£5,059.08
LB48Z	£2,479.57
LB49Z	£2,454.11
LB50Z	£4,903.03

LB51A	£1,897.63
LB51B	£1,534.97
LB52A	£6,607.34
LB52B	£2,242.84
LB53C	£1,467.66
LB53D	£1,763.33
LB54A	£1,116.61
LB54C	£1,468.27
LB55A	£683.35
LB55B	£943.14
LB56A	£1,026.29
LB56C	£1,543.16
LB57C	£2,176.85
LB57D	£476.21
LB58C	£2,190.53
LB58D	£413.21
LB59Z	£3,684.69
LB60C	£9,573.79
LB60E	£6,065.43
LB60F	£5,210.39
LB61C	£8,463.93
LB61D	£6,064.71
LB61E	£4,998.45
LB61F	£4,914.89
LB61G	£4,796.58
LB62C	£6,486.22
LB62D	£5,326.93
LB64C	£6,098.13
LB64D	£2,996.65
LB64E	£2,489.19
LB65C	£3,374.79
LB65D	£2,531.37
LB65E	£1,425.40
LB67C	£13,522.65
LB67D	£8,966.55
LB68A	£4,166.50
LB68B	£2,623.50
LB69Z	£7,763.84
LB70C	£3,045.32
LB70D	£2,615.13
LB72A	£409.36
LB72B	£801.53
LB74Z	£3,982.15
MA01Z	£5,467.73
MA02B	£4,209.72

MA02C	£3,676.11
MA03C	£3,107.58
MA03D	£2,532.15
MA04C	£2,501.14
MA04D	£2,087.46
MA06A	£4,871.05
MA06B	£3,783.22
MA06C	£3,362.98
MA07E	£5,336.99
MA07F	£3,944.64
MA07G	£3,255.48
MA08A	£3,209.11
MA08B	£2,888.08
MA09Z	£1,542.47
MA10Z	£1,180.92
MA11Z	£2,840.05
MA12Z	£1,112.56
MA17C	£1,150.77
MA17D	£1,449.77
MA18C	£729.37
MA18D	£991.08
MA19A	£724.06
MA19B	£735.02
MA20Z	£1,227.49
MA22Z	£1,375.81
MA23Z	£910.72
MA24Z	£1,009.95
MA25Z	£817.73
MA26A	£6,851.03
MA26B	£5,026.02
MA26C	£4,594.76
MA27Z	£1,030.43
MA28Z	£3,668.44
MA29Z	£1,544.79
MA30Z	£1,350.66
MA31Z	£775.03
MA32Z	£846.25
MA33Z	£885.70
MA34Z	£1,166.77
MA35Z	£631.48
MA36Z	£433.61
MA38Z	£503.08
MA39Z	£395.81
MA40Z	£699.03
MB05C	£6,662.48

MB05D	£5,287.21
MB05E	£3,537.51
MB05F	£2,303.05
MB05G	£5,387.16
MB05H	£3,710.38
MB05J	£3,141.07
MB05K	£1,569.16
MB05L	£1,557.71
MB08A	£1,732.75
MB08B	£466.09
MB09B	£2,566.40
MB09C	£2,428.72
MB09D	£2,206.44
MB09E	£542.97
MB09F	£514.50
MC09Z	£502.28
MC11Z	£903.32
MC12Z	£1,079.44
NZ10Z	£741.28
NZ16Z	£514.84
NZ17A	£1,742.01
NZ17B	£0.00
NZ18A	£2,327.73
NZ18B	£643.79
NZ19A	£632.65
NZ19B	£520.77
NZ20A	£569.62
NZ20B	£513.72
NZ21Z	£0.00
NZ22Z	£231.50
NZ23Z	£649.69
NZ24B	£2,146.26
NZ25Z	£1,766.53
NZ26A	£670.03
NZ26B	£2,065.46
NZ27Z	£2,284.30
NZ30A	£2,262.55
NZ30B	£1,147.73
NZ30C	£1,092.15
NZ31A	£2,685.65
NZ31B	£2,425.97
NZ31C	£2,208.06
NZ32A	£3,075.14
NZ32B	£2,640.80
NZ32C	£0.00

NZ33A	£2,983.78
NZ33B	£2,735.70
NZ33C	£2,512.40
NZ34B	£2,881.51
NZ34C	£2,825.40
NZ40A	£1,360.86
NZ40B	£2,488.36
NZ40C	£2,253.11
NZ41A	£3,165.62
NZ41B	£1,538.37
NZ41C	£2,532.36
NZ42A	£3,536.05
NZ42B	£3,001.46
NZ42C	£2,719.67
NZ43B	£3,130.63
NZ43C	£2,929.01
NZ44A	£3,855.94
NZ44B	£1,883.85
NZ44C	£3,175.10
NZ50A	£4,044.71
NZ50B	£3,127.84
NZ50C	£1,939.33
NZ51A	£5,164.17
NZ51B	£4,126.61
NZ51C	£3,441.76
PA01A	£3,913.13
PA01B	£830.64
PA02A	£608.50
PA03B	£514.21
PA04A	£572.08
PA04B	£490.55
PA07B	£1,523.56
PA08A	£2,350.40
PA08B	£692.65
PA11Z	£467.62
PA12Z	£1,410.11
PA14C	£3,250.84
PA14D	£679.77
PA14E	£490.45
PA16B	£1,803.64
PA17B	£1,724.24
PA19A	£535.54
PA21B	£1,381.30
PA22Z	£1,479.29
PA23A	£3,399.55

PA23B	£2,303.84
PA24Z	£1,899.46
PA25A	£4,433.02
PA26A	£3,008.65
PA26B	£1,542.16
PA27Z	£2,968.28
PA28A	£2,693.99
PA28B	£488.44
PA29Z	£505.45
PA30B	£651.62
PA31Z	£4,543.05
PA32B	£576.32
PA34A	£2,680.24
PA34B	£532.44
PA35B	£1,857.51
PA36Z	£2,269.61
PA48B	£2,176.65
PA50Z	£480.04
PA52C	£12,554.75
PA56B	£1,487.55
PA57Z	£1,818.39
PA58Z	£511.94
PA59E	£3,319.78
PA59F	£1,797.45
PA62Z	£457.81
PA63B	£636.20
PA63C	£1,469.76
PA65A	£458.62
PA67Z	£1,642.07
PA68Z	£2,000.68
PA69Z	£1,873.06
PA70Z	£477.02
QZ01C	£13,766.98
QZ01D	£11,208.28
QZ01E	£8,378.49
QZ01F	£7,077.00
QZ02C	£13,767.89
QZ02D	£9,768.56
QZ02E	£6,446.11
QZ02F	£5,459.81
QZ03B	£10,563.15
QZ05C	£1,898.17
QZ05D	£1,009.31
QZ05E	£1,008.63
QZ05F	£1,047.03

QZ11C	£15,879.14
QZ11D	£12,287.67
QZ11E	£10,158.69
QZ11F	£8,750.96
QZ12A	£9,783.80
QZ12B	£6,657.74
QZ12C	£5,260.20
QZ12D	£4,373.55
QZ12E	£1,098.05
QZ13Z	£1,805.34
QZ14Z	£474.97
QZ15D	£8,857.14
QZ15E	£9,724.57
QZ15F	£4,155.53
QZ15G	£2,494.01
QZ15H	£3,368.50
QZ15J	£2,291.41
QZ16D	£1,312.97
QZ16E	£864.87
QZ16F	£3,951.22
QZ16G	£3,331.18
QZ16H	£3,224.26
QZ17D	£5,790.42
QZ17E	£4,782.02
QZ17F	£693.37
QZ17G	£671.77
QZ17H	£2,194.59
QZ17J	£512.96
QZ19Z	£1,832.80
QZ20B	£494.16
QZ20C	£2,516.87
QZ20D	£1,587.00
QZ20E	£1,201.02
QZ21A	£1,534.74
QZ21B	£1,528.98
QZ22A	£1,230.38
QZ22B	£1,074.02
QZ24A	£5,212.58
QZ24B	£4,172.97
QZ24C	£3,943.14
QZ25A	£5,607.22
QZ25B	£3,814.50
RC02Z	£1,807.21
RC12A	£8,332.30
RC12C	£10,406.44

RC12D	£10,515.15
RC12E	£12,466.92
RC13C	£18,285.51
RC14Z	£2,650.85
RC15Z	£3,250.40
RC16Z	£5,947.00
RC31Z	£3,080.66
RC32Z	£3,359.62
RC33Z	£4,940.19
RC41Z	£1,957.52
RC51Z	£8,339.11
SA01G	£3,209.85
SA01H	£621.99
SA02G	£3,698.15
SA02H	£817.28
SA02J	£3,068.06
SA03G	£2,722.24
SA04G	£426.96
SA04H	£584.04
SA04J	£526.03
SA04K	£308.79
SA04L	£360.21
SA05H	£1,751.69
SA05J	£364.28
SA06G	£932.47
SA06H	£323.49
SA06J	£636.20
SA06K	£914.14
SA07G	£285.16
SA07H	£3,223.75
SA07J	£314.78
SA08G	£554.24
SA08H	£2,050.03
SA08J	£502.54
SA09G	£3,267.18
SA09H	£2,310.08
SA09J	£556.94
SA09K	£1,493.30
SA09L	£1,293.93
SA12G	£3,574.36
SA12H	£2,586.97
SA12J	£372.45
SA12K	£707.78
SA13A	£482.51
SA13B	£705.55

SA14Z	£9,908.42
SA17G	£4,081.88
SA17H	£288.20
SA18Z	£727.73
SA19A	£9,817.12
SA21A	£68,952.39
SA24J	£4,535.27
SA25G	£12,199.39
SA25H	£512.39
SA25J	£11,638.22
SA25K	£8,970.10
SA25L	£5,147.49
SA25M	£391.34
SA26A	£16,115.69
SA30A	£8,376.93
SA30B	£4,480.35
SA30C	£3,983.43
SA30D	£3,241.63
SA30E	£362.36
SA31A	£10,209.91
SA31B	£6,511.20
SA31C	£4,395.19
SA31D	£411.14
SA31E	£3,279.83
SA31F	£389.52
SA32C	£337.90
SA32D	£384.63
SA33Z	£530.82
SA34Z	£3,816.68
SA35B	£3,345.86
SA35C	£2,548.07
SA35D	£549.89
SA35E	£1,775.76
SA36A	£3,799.11
SA36B	£2,409.34
SA36C	£468.24
SA37Z	£390.80
SB97Z	£0.00
SC97Z	£0.00
UZ01Z	£0.00
VA10A	£569.25
VA10B	£2,655.92
VA10C	£3,280.54
VA10D	£5,207.60
VA11A	£857.58

VA11B	£3,622.68
VA11C	£1,163.69
VA11D	£8,685.13
VA12A	£4,935.13
VA12B	£1,778.03
VA12C	£7,170.38
VA12D	£9,786.02
VA13A	£5,525.23
VA13B	£5,696.81
VA13C	£8,641.99
VA13D	£12,174.40
VA14A	£7,821.35
VA14D	£7,835.66
VA15C	£15,836.28
WA01W	£5,006.52
WA01Y	£3,209.65
WA02Z	£406.25
WA03A	£4,572.79
WA03B	£3,147.09
WA03C	£2,223.86
WA04Z	£1,214.85
WA05Z	£3,334.39
WA06A	£6,054.21
WA06B	£450.56
WA06C	£404.27
WA07Z	£520.48
WA08Z	£538.90
WA09A	£4,100.05
WA09B	£2,587.80
WA09C	£1,968.41
WA10Z	£2,088.53
WA11A	£2,223.02
WA11B	£412.34
WA11C	£390.24
WA12A	£6,114.94
WA12B	£3,756.52
WA12C	£2,821.56
WA12D	£2,046.96
WA14A	£374.61
WA14B	£673.71
WA15A	£7,799.86
WA15B	£4,036.00
WA15V	£1,059.85
WA16W	£1,364.77
WA16Y	£370.14

WA17A	£3,987.07
WA17C	£1,580.32
WA17D	£1,368.60
WA18A	£4,264.16
WA18B	£2,467.62
WA18C	£451.85
WA18D	£473.55
WA18E	£1,661.02
WA18F	£427.71
WA19Z	£1,356.43
WA20Z	£409.28
WA21Z	£286.31
WA22A	£3,165.03
WA22B	£506.13
WA22C	£1,929.65
WA23A	£4,292.64
WA23B	£1,826.64
WA23C	£1,871.27
WA24A	£1,281.84
WA24B	£1,005.80
WD11Z	£480.61
WD22Z	£379.98
WF01A	£0.00
WF02A	£0.00

Source: NHS Digital. HRG4+ 2012/13 Reference Costs Grouper and Documentation. Available online: http://content.digital.nhs.uk/article/4698/HRG4-201213-Reference-Costs-Grouper-and-Documentation.

Table E. Unit costs of pain medications

Product code[1]	Unit cost
4	0.877
7	0.058
11	0.041
15	0.048
19	0.058
40	0.057
49	0.036
53	0.044
57	0.058
83	0.032
86	0.046
96	0.051
112	0.061
120	0.061
123	0.862
124	0.877
126	0.023
129	0.098
139	0.058
140	0.098
141	0.121
156	0.603
157	0.311
158	0.051
162	0.057
177	0.061
182	0.035
187	0.046
191	0.107
213	0.057
234	0.962
249	0.458
258	0.058
259	0.023
262	0.877
296	0.064
306	0.057
320	0.492
328	1.044
332	0.061
341	0.121
354	10.546

360	0.936
382	0.038
387	0.267
389	0.135
392	0.057
396	0.101
402	0.057
407	0.098
416	0.057
417	0.057
423	0.458
447	0.207
458	0.166
462	2.37
474	0.359
487	0.036
495	0.046
497	0.076
499	0.057
526	0.161
539	0.128
551	5.06
580	0.207
586	0.057
589	0.057
595	0.036
597	0.057
607	0.262
612	0.076
617	0.493
620	3.598
625	0.058
628	0.076
635	2.37
647	0.936
649	0.076
650	0.718
655	0.633
656	0.058
659	0.192
660	0.042
661	0.045
676	0.829
685	45.472
687	0.155

701	0.046
715	15
736	0.05
748	3.598
754	0.035
757	6.731
759	0.029
767	0.058
784	0.166
790	1.15
800	0.051
807	0.098
810	0.051
819	1.15
826	0.71
827	0.603
838	0.813
849	0.048
850	0.035
855	0.029
899	0.877
901	0.029
913	0.057
917	0.057
919	1.761
920	1.761
928	0.076
1030	0.016
1043	0.118
1051	0.076
1068	0.877
1073	0.064
1075	0.057
1086	0.098
1096	0.076
1115	0.311
1116	0.311
1139	0.076
1147	0.029
1156	0.061
1208	0.036
1210	0.076
1231	0.433
1233	0.207
1246	0.023

1261	0.051
1270	0.061
1392	0.138
1404	0.877
1446	0.057
1468	0.057
1469	0.045
1470	0.045
1496	0.076
1503	0.633
1544	0.052
1571	0.433
1584	0.072
1609	0.058
1621	0.057
1640	0.058
1688	0.05
1689	0.029
1692	0.057
1708	0.166
1739	0.048
1755	0.307
1766	0.207
1778	0.267
1808	70.239
1862	0.058
1866	0.098
1888	0.037
1983	0.023
1984	0.311
1999	1.38
2034	1.38
2040	0.058
2041	0.093
2047	0.057
2055	0.877
2129	0.138
2197	0.115
2200	0.061
2211	0.058
2234	0.153
2235	0.153
2243	0.035
2257	0.267
2288	0.045

2293	0.829
2344	0.029
2366	0.195
2367	0.68
2382	0.267
2386	0.311
2387	0.207
2450	0.962
2462	0.877
2463	0.121
2486	0.036
2525	0.035
2555	0.041
2586	0.029
2606	0.036
2622	0.138
2671	0.05
2693	0.061
2794	0.051
2800	0.058
2827	0.121
2846	0.057
2858	0.052
2863	0.267
2904	0.207
2917	0.057
2936	0.596
2938	0.016
2952	0.013
2957	0.192
2966	0.458
2985	0.037
2986	0.057
2997	0.046
3043	0.813
3053	0.098
3064	0.22
3074	0.029
3077	0.036
3156	0.058
3165	2.808
3168	0.688
3170	0.045
3182	0.103
3183	0.596

3185	0.057
3216	0.061
3239	0.197
3266	0.103
3311	0.326
3313	0.028
3316	0.029
3326	0.433
3378	0.046
3409	0.307
3416	0.311
3421	0.207
3431	0.045
3432	0.115
3435	0.058
3490	0.032
3496	0.045
3522	0.101
3597	0.057
3599	0.098
3644	0.29
3653	1.219
3698	0.115
3710	0.307
3713	0.058
3724	0.058
3777	0.032
3794	0.118
3817	0.118
3852	0.311
3897	0.532
3901	0.098
3903	0.95
3919	0.046
3935	0.307
3958	0.076
3972	0.045
3974	0.577
4016	0.118
4043	9.402
4045	0.115
4095	0.158
4114	0.29
4115	0.29
4118	0.596

4186	0.028
4196	2.107
4216	0.098
4266	0.046
4280	0.055
4298	0.057
4309	0.057
4320	0.453
4368	0.326
4369	0.057
4469	0.095
4476	0.371
4477	0.371
4506	0.207
4556	0.058
4564	0.095
4565	0.095
4600	0.877
4607	0.877
4625	0.207
4631	0.057
4633	0.877
4648	0.061
4671	0.051
4682	0.037
4690	0.032
4691	11.573
4692	0.057
4693	0.633
4710	0.023
4713	0.829
4731	0.016
4762	0.061
4781	0.05
4805	0.038
4806	0.311
4823	0.115
4834	0.406
4880	0.207
4911	0.048
4950	0.044
4965	0.307
4999	0.406
5025	70.239
5028	0.541

5048	6.731
5079	7.562
5080	0.718
5085	0.057
5137	0.315
5138	0.158
5169	0.541
5173	0.184
5175	0.359
5200	0.057
5221	0.104
5239	1.343
5243	0.058
5254	0.718
5257	0.406
5266	0.517
5268	0.098
5323	0.028
5339	0.059
5401	0.076
5407	0.453
5455	0.517
5482	0.684
5487	0.633
5535	0.633
5555	0.633
5563	0.262
5575	0.633
5585	0.461
5599	0.461
5648	0.057
5651	7.04
5652	0.5
5657	9.402
5664	0.166
5665	0.633
5668	7.562
5670	7.562
5681	0.046
5696	6.348
5697	6.609
5714	0.166
5767	0.061
5812	0.82
5833	4.409

5840	0.633
5843	0.461
5896	0.061
5936	3.95
5938	0.861
5955	0.058
5991	0.586
6002	0.046
6035	0.052
6040	5.928
6056	0.886
6115	0.603
6153	0.406
6181	7.9
6208	0.603
6210	0.886
6215	0.541
6225	0.59
6226	45.472
6231	70.239
6232	0.262
6234	0.196
6249	0.195
6269	0.262
6298	9.402
6304	0.072
6312	0.035
6366	0.5
6414	3.025
6435	0.603
6458	7.562
6459	7.562
6464	0.718
6498	0.82
6547	0.378
6557	0.229
6558	0.155
6571	2.107
6584	1.15
6608	0.945
6609	1.928
6631	1.15
6699	1.195
6708	1.93
6736	0.262

6769	0.229
6790	0.229
6853	0.061
6879	3.95
6881	0.603
6886	0.051
6892	0.939
6917	5.928
6936	1.15
6948	3.578
6949	1.15
6999	1.138
7005	1.15
7058	0.016
7063	0.877
7072	0.038
7082	3.598
7104	0.058
7107	6.731
7114	4.315
7126	2.518
7141	0.061
7167	0.229
7197	0.192
7205	0.058
7208	1.138
7209	1.15
7236	7.888
7238	14.365
7261	0.061
7275	0.945
7334	4.4
7372	0.945
7389	0.945
7394	1.15
7397	9.402
7406	0.461
7428	0.059
7432	0.381
7434	0.532
7450	0.862
7457	0.492
7469	0.107
7488	0.118
7489	0.029

7490	0.195
7499	0.057
7517	0.166
7518	0.057
7520	0.877
7524	0.307
7534	0.057
7535	0.057
7538	0.34
7542	0.057
7555	4.4
7667	0.158
7677	0.596
7678	0.95
7692	70.239
7729	0.633
7751	0.036
7780	0.596
7840	0.488
7849	8.543
7875	0.192
7913	0.267
7999	2.297
8017	0.22
8039	1.276
8040	3.028
8062	0.207
8075	0.964
8139	0.877
8233	0.057
8246	0.057
8329	0.057
8332	0.037
8335	0.058
8375	0.68
8385	0.488
8401	0.048
8416	0.541
8447	0.197
8451	0.326
8456	0.093
8493	0.773
8510	0.061
8600	0.307
8640	0.95

8663	0.098
8672	0.307
8726	0.032
8735	4.315
8740	0.192
8789	0.311
8822	0.371
8831	0.035
8866	0.235
8876	0.262
8878	0.032
8882	0.052
8969	0.136
9001	2.595
9012	4.409
9044	0.057
9053	37.365
9129	0.057
9137	0.262
9163	0.107
9183	0.586
9201	0.061
9209	0.155
9222	0.207
9231	0.029
9239	0.029
9271	1.38
9275	0.196
9313	0.155
9325	0.513
9329	0.877
9330	0.315
9331	0.513
9332	0.375
9337	0.192
9342	0.371
9371	1.041
9381	0.787
9389	0.046
9396	0.29
9421	0.036
9432	0.057
9439	9.402
9457	0.057
9460	0.057

9462	0.057
9465	0.311
9474	0.161
9476	0.058
9484	0.371
9500	0.207
9516	0.058
9557	0.166
9562	0.044
9602	0.055
9615	0.158
9630	0.052
9637	0.184
9672	0.586
9688	0.207
9712	0.028
9728	0.013
9736	0.262
9739	0.29
9742	0.057
9785	0.058
9822	0.861
9855	0.058
9874	1.928
9886	0.057
9914	0.028
9917	0.058
9927	1.93
9928	3.025
9945	0.235
9960	0.371
9966	0.59
9973	0.461
10007	0.042
10021	3.578
10023	0.107
10033	0.136
10077	0.378
10122	0.041
10149	0.057
10169	0.307
10176	0.058
10178	0.058
10189	1.15
10196	0.058

10205	7.888
10209	0.057
10226	0.058
10239	1.301
10265	0.061
10295	0.153
10309	1.219
10325	0.158
10336	0.381
10509	0.862
10558	0.076
10582	0.057
10583	0.862
10589	0.095
10602	0.058
10625	0.688
10631	0.046
10678	0.095
10701	0.057
10730	0.046
10748	0.058
10769	1.044
10785	0.166
10792	0.057
10866	1.361
10917	0.311
10922	11.573
10925	1.92
10978	0.076
10993	0.029
11009	0.057
11101	0.046
11129	45.472
11168	0.311
11215	0.076
11250	0.058
11275	0.865
11322	0.207
11325	0.057
11342	0.633
11405	0.461
11461	0.166
11466	0.153
11471	0.865
11495	0.307

11522	0.603
11540	0.603
11549	0.473
11550	0.057
11554	0.057
11559	0.046
11584	7.9
11614	0.058
11665	0.058
11698	0.192
11722	0.08
11734	0.046
11746	0.792
11748	1.08
11755	0.262
11801	1.92
11807	0.057
11837	0.59
11838	1.276
11843	6.506
11907	0.166
11942	0.118
11961	0.057
11963	0.035
11970	0.035
11971	0.633
11980	0.048
11982	2.518
11986	0.029
11995	0.433
11999	0.433
12000	0.433
12020	2.595
12075	0.577
12122	0.135
12171	0.057
12219	4.409
12353	0.95
12394	0.877
12447	0.877
12549	0.596
12591	0.371
12602	0.046
12604	0.586
12709	0.057

12776	0.061
12889	0.262
12900	0.192
12992	0.057
13031	0.22
13076	6.506
13083	0.061
13114	0.046
13117	0.192
13172	4.409
13225	4.409
13280	4.409
13300	14.365
13347	0.135
13380	0.684
13420	4.315
13459	0.064
13606	0.061
13627	0.045
13639	0.05
13711	0.262
13807	0.061
13813	0.046
13818	0.153
13893	0.057
13995	1.276
13997	0.586
14050	0.586
14063	0.586
14084	0.207
14085	0.311
14086	1.12
14156	0.633
14226	0.192
14333	0.048
14378	0.058
14385	0.057
14476	0.076
14490	0.046
14534	0.035
14541	0.262
14551	0.877
14570	0.061
14578	0.773
14602	0.128

14627	0.877
14672	0.207
14676	0.057
14678	0.311
14688	0.107
14707	0.311
14776	0.267
14785	0.057
14829	0.058
14884	0.603
14899	0.028
14900	11.573
14901	0.603
14912	0.057
14935	4.409
14964	0.058
15005	0.061
15023	0.115
15068	0.048
15104	0.098
15159	1.275
15180	0.098
15198	0.041
15201	0.057
15238	0.058
15286	0.813
15337	7.015
15339	0.235
15353	45.472
15361	6.915
15367	0.877
15501	0.195
15732	0.057
15767	0.061
15779	0.057
15781	0.787
15792	0.375
15793	4.315
15798	1.001
15815	0.5
15831	0.051
15845	0.058
15871	1.343
15930	0.061
15950	1.276

15964	0.371
16001	0.057
16039	0.057
16076	0.473
16096	0.057
16106	0.058
16112	0.877
16189	4.409
16192	0.057
16193	0.138
16194	0.326
16215	0.05
16221	0.076
16222	0.057
16225	0.311
16271	0.792
16272	0.311
16273	0.192
16286	0.207
16335	4.409
16395	0.541
16467	0.051
16473	0.153
16474	0.153
16509	1.15
16542	1.15
16592	0.057
16618	9.402
16818	0.057
17029	0.207
17030	0.207
17043	0.71
17068	0.061
17073	6.915
17124	0.311
17126	0.207
17128	0.057
17158	0.058
17165	0.098
17183	0.596
17201	0.098
17386	0.962
17398	4.409
17412	0.058
17491	0.207

17525	0.311
17532	0.311
17563	0.058
17564	0.104
17572	0.577
17671	1.128
17680	0.076
17733	0.098
17750	0.061
17754	0.095
17818	0.433
17863	1.044
17893	0.371
17896	1.128
17917	0.107
17926	0.057
17936	1.276
17943	0.262
17998	0.058
18151	0.603
18166	1.276
18174	7.04
18196	0.016
18211	0.386
18221	0.038
18234	0.076
18342	0.036
18364	0.048
18371	0.311
18441	1.195
18448	0.158
18491	0.458
18527	0.048
18560	42.859
18566	4.409
18647	0.813
18656	0.046
18662	0.076
18700	0.192
18734	0.586
18792	0.235
18798	0.057
18799	1.343
18800	0.59
18801	0.586

18812	0.057
18820	0.016
18881	0.046
18921	0.076
18922	0.058
19007	0.098
19036	0.057
19046	0.048
19092	0.5
19116	0.458
19139	0.058
19146	8.77
19206	0.058
19291	0.262
19317	0.057
19320	0.307
19382	0.207
19398	0.061
19449	0.192
19471	0.371
19477	0.586
19575	0.057
19764	0.057
19779	0.035
19954	1.902
19972	1.902
19993	0.29
20005	4.409
20026	0.036
20036	1.275
20059	0.267
20068	0.028
20105	0.076
20116	0.058
20127	0.057
20310	0.046
20384	0.311
20385	0.098
20386	0.326
20395	0.207
20403	0.877
20442	0.061
20565	0.057
20571	0.773
20621	0.207

20650	0.877
20783	0.192
20805	0.207
20815	0.262
20967	0.061
20978	0.057
21045	0.048
21050	0.433
21081	0.035
21113	0.044
21123	0.307
21229	0.877
21251	0.058
21256	0.046
21275	1.001
21285	2.854
21387	0.057
21397	1.08
21419	0.158
21421	0.166
21444	0.076
21562	0.013
21610	0.311
21673	0.057
21703	0.057
21745	0.052
21777	0.541
21797	0.541
21807	0.076
21811	0.057
21813	0.048
21815	0.098
21816	0.098
21821	0.098
21824	0.057
21831	0.023
21840	0.045
21843	0.115
21846	0.307
21864	0.121
21880	0.051
21947	0.406
21952	8.77
21955	0.813
22014	0.029

22024	0.046
22026	0.192
22066	6.731
22070	0.032
22206	0.166
22230	0.023
22288	0.028
22305	0.877
22380	1.236
22571	0.939
22690	1.041
22756	0.192
22764	0.058
23026	0.076
23060	1.276
23077	0.029
23114	0.029
23121	0.098
23158	0.16
23204	0.076
23323	0.098
23420	0.128
23425	0.057
23442	0.71
23617	0.877
23625	0.406
23716	0.058
23795	1.761
23840	0.058
23952	0.058
23981	0.406
24000	0.058
24007	0.098
24020	0.045
24075	0.058
24086	0.061
24108	7.562
24121	0.076
24122	0.057
24125	0.057
24128	0.076
24133	0.058
24134	0.036
24137	0.061
24141	0.032

24145	0.036
24147	0.036
24152	0.032
24193	0.061
24212	0.05
24236	0.311
24305	0.048
24308	0.076
24320	0.05
24343	0.08
24356	0.136
24361	0.16
24383	0.29
24440	0.013
24453	0.586
24469	0.936
24531	0.577
24534	0.058
24584	1.128
24617	0.036
24640	8.543
24680	0.032
24682	0.577
24736	2.854
24828	0.057
24830	4.436
24867	0.458
24887	0.057
24947	0.058
24986	7.014
25109	0.058
25185	0.493
25199	6.348
25205	0.936
25257	0.057
25283	0.057
25329	0.076
25330	0.057
25341	0.045
25342	0.098
25358	0.057
25361	0.076
25362	0.076
25481	10.546
25514	0.057

25529	0.057
25619	0.048
25643	0.267
25701	0.813
25750	0.045
25790	0.076
25794	0.048
25800	0.936
25815	0.357
25833	1.044
25895	0.058
26021	7.014
26083	1.761
26095	0.048
26115	45.472
26133	0.058
26159	0.061
26165	0.057
26213	0.032
26216	0.098
26231	0.098
26234	0.121
26242	0.045
26247	0.064
26277	0.013
26283	0.046
26284	0.586
26291	0.877
26336	0.792
26351	0.207
26522	0.064
26575	0.161
26631	0.311
26746	0.058
26888	0.311
26908	6.609
26967	0.877
26970	0.936
26986	0.541
26988	0.058
27008	0.037
27013	0.813
27055	0.057
27058	0.371
27064	0.877

27082	0.433
27197	0.877
27200	0.311
27362	0.311
27366	0.098
27441	0.633
27446	0.877
27452	0.058
27454	0.072
27459	0.058
27484	0.16
27490	0.16
27591	0.406
27677	0.829
27749	1.301
27778	0.036
27782	0.048
27783	0.048
27784	0.058
27785	0.051
27856	0.877
27968	0.048
28168	0.057
28172	0.166
28189	11.573
28211	0.028
28255	0.045
28256	0.057
28328	0.013
28332	0.577
28344	0.058
28346	0.058
28348	0.057
28390	0.076
28421	0.633
28479	0.166
28553	0.057
28598	0.107
28636	0.877
28695	0.121
28711	4.315
28712	0.029
28713	0.34
28728	0.792
28764	0.311

28780	0.041
28784	0.057
28816	0.098
28878	0.877
28888	0.057
28900	0.061
28955	0.058
29014	2.808
29020	1.276
29037	0.311
29068	0.048
29181	0.207
29232	0.061
29304	1.128
29316	0.048
29324	0.473
29330	0.057
29332	0.936
29342	0.058
29345	0.936
29352	0.936
29373	0.057
29426	0.71
29455	0.311
29465	0.307
29480	6.915
29488	0.058
29500	4.315
29524	0.098
29577	7.015
29587	0.048
29704	0.057
29749	0.057
29772	0.813
29860	0.046
29898	0.633
29951	1.343
30021	0.057
30049	15
30070	0.058
30123	0.058
30164	0.166
30165	0.107
30168	0.045
30243	0.057

30252	0.633
30282	0.207
30295	0.107
30297	0.057
30327	0.813
30382	0.057
30389	0.023
30391	0.064
30444	0.041
30514	3.028
30531	0.013
30556	0.058
30698	7.562
30724	0.936
30761	0.235
30790	0.207
30806	0.057
30811	0.166
30849	0.207
30892	0.936
30923	0.311
30942	0.057
30954	0.877
30966	0.877
30982	0.098
30984	0.877
30994	0.877
31033	4.315
31053	3.598
31054	0.061
31064	0.577
31105	0.541
31107	0.406
31151	0.058
31155	0.058
31178	0.036
31196	0.058
31253	0.71
31257	0.058
31383	0.207
31429	0.045
31452	0.051
31469	0.098
31482	0.057
31540	5.06

31577	0.051
31582	0.862
31584	0.862
31589	0.207
31650	4.409
31700	0.038
31734	1.08
31777	0.307
31787	0.207
31871	0.057
31885	0.71
31894	0.057
31916	0.433
31935	0.962
31943	0.051
31944	0.076
31945	0.098
31950	0.057
31959	0.05
31960	4.315
31962	0.813
32090	0.064
32093	0.877
32097	0.076
32100	0.098
32105	0.064
32108	0.076
32136	0.057
32163	0.058
32165	0.046
32227	0.813
32234	0.064
32237	0.013
32242	0.048
32365	0.048
32366	0.057
32425	3.025
32436	0.057
32439	0.036
32450	1.08
32509	0.057
32519	0.877
32520	0.046
32536	0.076
32554	0.877

32601	0.311
32626	0.877
32641	0.061
32688	7.562
32692	0.058
32766	1.236
32831	0.71
32839	0.058
32854	0.207
32862	0.936
32875	0.048
32891	0.877
32897	7.562
32916	0.207
32926	0.041
32970	0.058
32993	2.107
33060	0.058
33068	1.128
33090	0.032
33104	0.058
33111	0.045
33113	0.05
33133	4.409
33180	0.813
33260	0.057
33318	0.05
33321	0.05
33340	0.877
33357	0.057
33386	0.877
33457	0.057
33475	1.7
33559	0.057
33568	0.813
33589	0.048
33614	0.058
33624	0.037
33643	0.058
33645	0.207
33647	0.877
33653	0.058
33654	0.044
33666	0.058
33669	0.057

33679	0.058
33687	0.877
33688	0.051
33704	0.936
33710	0.058
33743	0.107
33781	4.409
33785	0.057
33801	0.023
33826	0.058
33832	0.013
33838	0.877
33935	0.048
33961	0.051
33994	0.076
33995	0.877
34008	0.044
34022	0.877
34065	0.406
34073	0.633
34090	0.057
34091	0.076
34107	0.037
34129	0.036
34143	0.453
34152	0.057
34164	0.058
34172	0.057
34176	0.057
34182	0.037
34190	0.076
34197	0.036
34199	1.761
34209	0.058
34212	0.207
34218	0.076
34224	0.035
34229	0.058
34235	0.029
34251	0.032
34257	0.058
34260	0.29
34264	0.051
34266	0.029
34271	0.311

34274	0.037
34281	0.541
34289	0.045
34290	0.045
34305	0.058
34319	0.877
34348	0.038
34349	0.877
34350	0.058
34354	0.057
34359	0.048
34362	0.076
34373	0.057
34383	0.051
34396	0.058
34397	0.877
34401	0.032
34409	0.058
34422	0.046
34425	0.048
34437	0.057
34438	0.023
34440	0.044
34444	0.038
34447	0.057
34468	0.877
34474	0.036
34477	0.633
34487	0.057
34489	7.562
34495	0.058
34497	0.058
34500	0.058
34503	0.036
34506	0.042
34518	0.058
34521	0.046
34527	0.057
34536	0.048
34546	0.877
34550	0.048
34552	0.051
34554	0.877
34570	0.046
34579	0.044

34595	0.064
34597	0.877
34606	0.042
34610	0.098
34616	0.052
34621	0.057
34634	0.037
34639	0.046
34662	0.044
34663	0.936
34667	0.051
34669	0.058
34670	0.045
34678	0.877
34700	0.877
34716	0.072
34718	0.029
34725	0.103
34729	0.048
34730	0.044
34731	0.032
34737	0.041
34738	0.045
34743	0.098
34744	0.311
34757	0.048
34761	0.877
34769	0.098
34771	4.409
34782	0.036
34784	0.058
34786	7.562
34787	7.562
34789	0.051
34793	0.023
34808	0.046
34815	0.058
34840	0.051
34845	0.051
34850	0.098
34858	0.058
34861	0.029
34865	0.058
34889	0.048
34898	0.023

34910	0.064
34911	0.057
34916	0.032
34920	0.041
34922	0.098
34923	0.045
34924	0.023
34931	0.057
34939	0.041
34946	0.104
34954	0.058
34961	0.098
34968	0.058
34977	0.098
34980	0.057
35038	3.025
35085	3.025
35093	4.409
35169	0.886
35170	0.378
35255	4.409
35265	0.016
35269	0.492
35292	0.057
35330	0.493
35341	3.025
35347	0.29
35438	0.29
35506	1.128
35562	6.291
35651	0.541
35653	0.517
35656	0.29
35679	0.058
35681	0.378
35682	0.886
35711	0.076
35749	0.061
35792	0.057
35800	0.877
35806	0.29
35853	0.493
35890	0.057
35893	0.311
35935	0.035

35939	4.409
35965	0.058
35967	0.877
35968	3.598
36019	0.041
36035	0.792
36038	4.409
36040	11.573
36152	0.877
36211	6.731
36260	0.023
36329	0.061
36436	1.128
36472	0.862
36486	0.311
36488	0.051
36577	0.05
36597	0.057
36606	0.048
36608	0.051
36650	0.057
36697	0.541
36732	0.046
36754	0.058
36787	0.048
36873	0.046
36929	0.877
36945	0.877
36949	0.046
36993	0.051
36994	0.057
37002	0.057
37020	0.406
37021	0.541
37053	0.057
37094	0.057
37253	0.048
37291	0.041
37411	0.877
37507	1.128
37518	1.128
37553	0.048
37562	0.5
37587	0.5
37648	0.048

37688	0.603
37703	0.71
37719	11.573
37731	0.057
37750	0.307
37763	0.945
37779	3.598
37801	1.15
37816	0.057
37831	0.29
37850	0.061
37867	0.29
37904	0.058
37923	6.731
37928	2.518
37954	2.518
37960	6.731
37968	6.152
37972	0.061
37979	0.118
38013	0.962
38031	3.598
38032	0.058
38085	0.057
38088	0.057
38092	0.862
38103	0.962
38183	0.493
38196	0.541
38199	4.409
38293	1.15
38311	0.378
38323	0.877
38326	9.402
38332	0.057
38351	9.402
38363	0.057
38365	9.402
38430	0.041
38493	0.057
38511	0.045
38521	0.044
38527	0.061
38528	0.046
38553	11.573

38770	0.517
38817	0.158
38827	0.032
38874	0.865
38881	0.207
38943	0.877
38944	9.402
38948	0.311
38950	0.058
38956	0.541
38970	0.115
38976	15.077
38984	0.058
38992	0.207
39019	0.138
39084	11.573
39085	0.045
39104	6.915
39109	0.307
39145	0.596
39180	6.731
39215	0.86
39240	1.51
39251	3.598
39264	0.311
39317	0.098
39333	0.058
39340	0.058
39354	0.016
39362	15.077
39363	1.51
39437	0.013
39461	0.057
39469	9.085
39475	0.229
39477	0.229
39478	0.945
39481	0.058
39498	0.945
39502	0.057
39505	0.29
39518	9.085
39558	0.044
39590	6.506
39629	0.877

39647	0.877
39656	0.877
39693	1.291
39708	0.603
39709	0.541
39722	0.158
39723	9.085
39746	9.085
39750	0.406
39756	6.506
39758	0.057
39798	0.29
39799	6.609
39811	0.541
39823	0.057
39842	0.197
39873	0.048
39876	0.603
39929	6.506
39934	0.058
39940	0.058
39987	7.04
40018	6.506
40058	0.29
40060	0.541
40061	0.406
40083	0.057
40086	0.057
40098	7.04
40107	0.058
40128	7.04
40141	0.433
40158	0.058
40159	0.107
40166	0.046
40185	0.813
40211	0.378
40212	0.886
40215	0.433
40239	0.962
40249	0.29
40253	0.098
40254	0.046
40336	0.135
40385	0.058

40394	0.048
40396	0.037
40401	0.045
40422	0.041
40434	6.348
40473	0.492
40484	0.433
40508	6.348
40516	0.057
40563	0.192
40576	7.04
40616	1.928
40645	1.928
40662	0.058
40663	0.051
40664	0.488
40688	3.025
40718	0.046
40752	3.025
40756	0.076
40785	1.93
40805	0.406
40883	0.406
40926	0.406
40940	4.995
40957	6.609
40961	1.93
41135	74.044
41161	9.402
41214	0.057
41259	0.051
41275	0.058
41276	0.058
41278	0.041
41286	4.995
41348	6.348
41364	0.433
41365	0.813
41366	0.433
41367	0.813
41407	0.877
41409	0.058
41414	0.029
41416	0.128
41450	0.433

41513	0.057
41521	0.061
41523	0.057
41524	0.064
41535	0.051
41550	0.71
41599	0.038
41608	0.013
41615	0.05
41621	0.307
41622	0.121
41623	0.307
41624	0.121
41668	0.166
41673	0.046
41674	0.166
41677	0.023
41680	0.029
41682	0.051
41701	0.098
41720	0.013
41722	7.562
41729	0.036
41817	0.076
41823	0.076
41974	4.409
41976	0.29
42003	0.076
42021	11.573
42074	0.396
42078	0.036
42094	0.862
42101	1.236
42108	0.057
42125	0.029
42201	0.058
42208	0.044
42213	0.058
42218	0.057
42280	0.155
42332	0.155
42345	0.877
42371	1.343
42380	0.046
42394	0.036

42397	0.057
42399	6.609
42406	0.057
42455	0.311
42500	0.433
42514	0.877
42538	6.348
42576	9.402
42590	9.402
42591	3.598
42604	0.577
42706	0.058
42708	0.458
42791	0.051
42792	0.057
42793	0.311
42798	0.406
42821	0.153
42834	1.343
42905	0.207
42913	7.562
42915	0.877
43028	0.877
43032	0.057
43045	0.057
43089	9.085
43096	0.061
43152	6.731
43198	0.046
43199	0.877
43233	0.058
43238	0.051
43244	0.051
43252	0.058
43260	0.914
43315	0.939
43414	0.058
43426	0.061
43441	0.041
43447	0.877
43456	0.048
43479	0.058
43504	0.057
43513	0.046
43536	0.877

43541	0.121
43550	0.038
43554	0.877
43616	0.539
43617	6.506
43652	0.586
43657	1.276
43766	0.057
43812	0.493
43891	0.877
43904	0.057
43911	0.098
44022	0.386
44112	0.158
44159	0.058
44187	0.104
44210	0.058
44232	210
44233	0.016
44258	0.877
44261	0.386
44313	0.061
44371	0.406
44483	0.048
44487	2.518
44703	0.121
44730	0.061
44800	0.098
44837	6.731
44867	0.862
44924	0.051
44986	0.098
45092	6.506
45145	0.061
45213	1.225
45216	0.048
45231	0.877
45233	0.032
45242	0.032
45256	0.061
45259	0.058
45262	0.453
45276	0.877
45298	0.058
45320	0.057

45325	0.458
45331	0.057
45348	0.029
45349	2.107
45439	9.085
45460	11.573
45549	3.598
45598	74.044
45645	0.029
45649	0.029
45736	0.371
45745	1.361
45766	2.723
45788	0.681
45790	0.681
45800	1.779
45811	0.445
45814	0.158
45827	1.361
45830	5.447
45842	0.098
45894	9.085
45929	2.723
45936	0.445
45982	0.445
46018	0.89
46019	1.334
46020	0.89
46021	0.445
46022	0.667
46141	0.057
46159	1.334
46187	5.447
46279	0.541
46342	0.016
46354	7.04
46440	0.098
46461	0.667
46511	0.058
46544	0.058
46555	6.609
46559	2.518
46560	6.731
46578	1.128
46587	0.29

46633	0.058
46638	0.057
46643	0.406
46657	9.402
46658	11.573
46659	1.779
46729	0.058
46733	3.598
46763	0.877
46801	0.035
46818	0.035
46844	0.207
46846	0.058
46848	0.098
46860	0.057
46898	0.058
46904	0.058
46906	0.058
46919	0.813
46920	0.813
46921	0.048
46925	0.057
46940	0.433
46942	0.098
46967	0.023
46968	0.023
46970	0.037
46987	0.038
47003	0.128
47071	0.041
47072	45.472
47081	0.057
47116	0.058
47154	1.276
47200	0.877
47211	0.058
47350	0.603
47399	2.224
47401	0.061
47413	9.402
47460	2.224
47501	0.207
47508	0.058
47555	4.409
47579	0.042

47671	7.562
47672	7.562
47706	0.013
47753	0.787
47759	7.04
47816	0.577
47820	0.076
47834	0.058
47847	0.051
47854	0.046
47867	1.301
47919	0.038
47949	1.041
47952	0.051
47985	0.046
47994	0.045
48004	0.051
48035	0.072
48059	0.057
48060	0.072
48062	0.057
48064	6.291
48065	0.035
48066	0.057
48071	0.052
48084	0.936
48090	0.541
48128	0.71
48129	0.877
48133	0.044
48136	0.038
48138	0.057
48148	0.71
48153	0.128
48157	0.877
48158	7.562
48161	0.098
48178	0.058
48183	0.493
48216	0.95
48218	0.311
48253	1.15
48259	7.562
48295	0.877
48301	0.877

48311	0.051
48326	0.936
48330	0.877
48354	0.877
48413	7.562
48434	7.562
48444	0.877
48483	7.562
48526	1.343
48535	0.058
48546	0.048
48561	0.877
48562	0.936
48568	0.057
48571	6.731
48597	0.058
48604	4.409
48622	0.877
48644	0.048
48675	0.061
48738	0.936
48775	0.051
48810	0.023
48816	0.877
48871	0.076
48880	7.562
48913	7.562
48964	0.057
49059	0.057
49096	0.058
49105	0.058
49132	0.603
49133	0.936
49219	0.877
49266	0.936
49277	0.057
49314	0.877
49323	0.406
49324	0.29
49395	8.77
49417	0.058
49432	0.936
49524	0.877
49575	0.058
49742	0.229

49787	0.945
49788	0.603
49791	3.025
49849	0.058
49862	0.603
49940	0.229
49976	4.409
50058	0.057
50059	0.359
50095	0.229
50117	0.936
50166	0.877
50232	0.877
50266	0.057
50269	0.207
50314	0.098
50317	0.207
50343	0.052
50363	0.936
50380	0.378
50421	0.038
50428	5.06
50468	0.038
50482	0.058
50504	0.058
50513	4.409
50532	0.044
50602	0.057
50628	0.048
50652	0.936
50659	0.128
50671	2.518
50726	3.025
50733	0.461
50785	0.057
50813	0.061
50862	0.541
50881	0.058
50929	2.518
50947	0.29
51084	0.051
51099	0.057
51118	0.072
51235	3.598
51237	0.603

51242	0.098
51284	0.718
51293	0.057
51327	0.051
51339	0.061
51343	0.076
51360	0.045
51381	0.058
51384	0.945
51595	0.877
51611	3.025
51614	0.057
51644	0.051
51769	0.936
51789	0.461
51808	0.424
51819	0.058
51827	0.064
51828	0.936
51829	0.045
51896	3.578
51923	0.061
51937	0.038
51943	0.936
52009	0.057
52085	0.051
52141	0.061
52154	0.057
52178	0.493
52216	0.229
52217	0.461
52220	1.93
52229	0.603
52338	0.057
52389	0.057
52400	0.71
52420	0.359
52455	0.877
52495	0.046
52509	6.291
52547	1.15
52592	0.461
52605	0.046
52617	0.936
52714	0.517

52785	6.915
52809	0.461
52856	0.057
52867	0.032
52888	0.038
52889	0.057
52929	0.038
52931	0.098
52948	0.877
52956	0.603
52966	0.058
52977	0.29
53062	17.128
53079	0.041
53106	4.409
53113	0.461
53116	0.945
53164	0.076
53181	7.562
53208	0.877
53287	0.051
53296	0.072
53331	0.936
53345	0.057
53384	0.057
53397	0.936
53417	7.562
53576	0.861
53600	0.128
53604	0.057
53617	0.057
53626	0.098
53639	0.046
53679	0.051
53700	0.045
53702	0.051
53709	0.962
53784	0.357
53803	0.057
53918	4.409
53929	0.71
53952	0.058
53961	1.236
53980	0.045
53999	0.128

54017	0.633
54021	0.311
54023	0.046
54063	42.859
54075	0.057
54085	0.962
54137	0.048
54179	0.058
54304	0.098
54353	0.877
54354	0.044
54406	0.192
54463	0.057
54476	0.098
54484	6.291
54514	0.048
54518	0.057
54520	0.633
54660	0.424
54694	3.578
54713	0.058
54783	0.045
54790	0.962
54806	5.928
54853	0.877
54870	0.052
54877	0.036
54906	1.225
54979	6.731
55009	0.098
55044	0.051
55052	0.5
55099	0.311
55129	0.058
55139	0.036
55153	0.048
55206	0.262
55221	7.562
55233	0.048
55245	0.877
55309	0.038
55313	0.048
55418	0.058
55425	0.107
55434	0.048

55454	0.098
55465	0.051
55486	0.098
55491	0.032
55505	0.045
55530	0.041
55535	0.072
55582	0.718
55624	0.072
55752	11.573
55817	0.877
55825	0.013
55832	4.409
55839	0.458
55852	0.458
55894	0.098
55913	0.057
55970	0.596
56006	0.058
56022	0.962
56039	0.098
56046	0.058
56071	0.603
56078	0.311
56106	0.453
56171	0.051
56178	2.37
56202	10.546
56205	0.058
56213	0.048
56266	0.051
56275	0.035
56282	0.603
56340	0.051
56441	0.936
56461	0.051
56491	0.541
56549	0.058
56554	0.453
56558	0.603
56559	0.051
56565	0.038
56566	0.058
56584	0.718
56651	0.052

56665	0.461
56670	3.598
56671	4.4
56688	6.291
56762	0.453
56788	0.633
56817	0.038
56898	0.207
56925	0.045
56945	0.058
57006	0.076
57007	0.023
57027	0.962
57033	0.461
57045	0.057
57052	0.945
57097	0.051
57107	0.032
57112	0.048
57120	0.042
57139	0.59
57162	0.057
57197	0.041
57297	0.064
57353	0.051
57370	0.045
57381	0.128
57433	0.058
57454	0.886
57465	0.058
57475	0.035
57487	0.051
57523	0.052
57527	0.072
57545	0.603
57623	4.409
57649	0.072
57650	0.058
57750	4.409
57752	0.057
57839	0.038
57865	0.051
57900	0.051
57929	0.058
57943	0.813

57972	0.032
58039	1.928
58048	0.057
58071	0.057
58114	0.945
58129	0.29
58190	0.71
58213	0.098
58217	0.229
58221	0.045
58248	6.291
58273	0.378
58279	0.235
58288	0.051
58290	0.046
58298	0.052
58316	0.046
58382	0.042
58383	0.05
58415	0.057
58472	0.357
58493	0.945
58499	4.315
58501	0.051
58523	0.05
58526	0.058
58572	0.076
58582	0.058
58636	0.058
58652	0.098
58708	0.098
58710	15
58737	0.962
58743	0.058
58766	7.888
58842	0.207
58848	0.058
58853	0.461
58855	0.051
58888	0.061
58960	0.042
59057	7.04
59067	0.057
59131	0.058
59147	0.104

59161	0.032
59203	0.936
59246	0.098
59289	0.311
59392	7.9
59442	0.051
59473	5.928
59479	0.051
59490	3.092
59553	0.057
59562	0.098
59584	0.633
59595	0.057
59599	0.058
59618	3.95
59678	0.493
59705	0.058
59820	0.032
59865	0.461
59878	0.045
59880	0.207
59970	0.378
59978	0.044
59986	0.051
59989	0.044
60035	0.057
60053	0.101

Source: BNF unit costs (2013 UK pounds). Available online: http://www.bnf.org/bnf/org_450080.htm.
Note(1): Product code descriptions available from https://www.cprd.com/ObservationalData/CodedData.asp#DrugsinPrimarycare.

STROBE Statement—Checklist of items that should be included in reports of ***cohort studies***

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract **[See the title, page 1, and 'design' section of the abstract, page 2]**
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found **[See 'primary and secondary outcome measures' and 'results' sections of abstract, page 2]**
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported **[See 'introduction' section, page 4]**
Objectives	3	State specific objectives, including any prespecified hypotheses **[See final paragraph of 'introduction' section, page 4]**
Methods		
Study design	4	Present key elements of study design early in the paper **[pages 4-7]**
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection **[pages 4-5]**
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up **[pages 4-6]**
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed **[pages 7-8]**
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable **[pages 5-7]**
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group **[pages 6-7]**
Bias	9	Describe any efforts to address potential sources of bias **[See pages 7-8 with more information included in the 'study limitations' section, page 14]**
Study size	10	Explain how the study size was arrived at **[See pages 5-6 and 'rates of lumbar surgery in HES' and 'percentage of lumbar surgery patients with persistent postoperative pain (cases)' under 'results', pages 8-9]**
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why **[pages 7-8]**
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding **[page 7-8]**
		(*b*) Describe any methods used to examine subgroups and interactions **[n/a]**
		(*c*) Explain how missing data were addressed **[n/a]**
		(*d*) If applicable, explain how loss to follow-up was addressed **[n/a, the study inclusion criteria stipulated that all patients were required to have 2 years follow up in the data]**
		(*e*) Describe any sensitivity analyses **[page 8]**
Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed **[pages 8-9]**
		(b) Give reasons for non-participation at each stage **[n/a]**
		(c) Consider use of a flow diagram **[n/a]**
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and

		information on exposures and potential confounders **[page 10 and table 1]**
		(b) Indicate number of participants with missing data for each variable of interest **[Table 2]**
		(c) Summarise follow-up time (eg, average and total amount) **[pages 12-13]**
Outcome data	15*	Report numbers of outcome events or summary measures over time **[Tables 2 and 3]**
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included **[n/a matched control group used to obtain net costs attributable to PPP]**
		(*b*) Report category boundaries when continuous variables were categorized **[n/a]**
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period **[n/a]**
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses **[page 13]**
Discussion		
Key results	18	Summarise key results with reference to study objectives **[Pages 13-14]**
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias **[Pages 14-15]**
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence **[Pages 15-16]**
Generalisability	21	Discuss the generalisability (external validity) of the study results **[Pages 14-15]**
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based **[See 'funding' and 'competing interests' data uploaded with submission]**

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at http://www.strobe-statement.org.

BMJ Open

The incidence and healthcare costs of persistent post-operative pain following lumbar spine surgery in the United Kingdom: a cohort study using the Clinical Practice Research Datalink (CPRD) and Hospital Episode Statistics (HES)

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Primary Subject Heading:	Epidemiology
Secondary Subject Heading:	Health economics
Keywords:	Persistent post-operative pain (PPP), Failed Back Surgery Syndrome (FBSS), Lumbar surgery, Clinical Practice Research Datalink (CPRD), Hospital Episode Statistics (HES)

The incidence and healthcare costs of persistent post-operative pain following lumbar spine surgery in the United Kingdom: a cohort study using the Clinical Practice Research Datalink (CPRD) and Hospital Episode Statistics (HES)

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Abstract

Objective: To characterize incidence and healthcare costs associated with persistent post-operative pain (PPP) following lumbar surgery.

Design: Retrospective, population-based cohort study.

Setting Clinical Practice Research Datalink (CPRD) and Hospital Episode Statistics (HES) databases.

Participants: Population-based cohort of 10,216 adults who underwent lumbar surgery in England from 1997/98 through 2011/12 and had at least one year of pre-surgery data and two years of postoperative follow-up data in the linked CPRD-HES.

Primary and secondary outcomes measures: Incidence and total healthcare costs over 2, 5, and 10 years attributable to persistent postoperative pain following initial lumbar surgery.

Results: The rate of individuals undergoing lumbar surgery in the CPRD-HES linked data doubled over the 15-year study period, fiscal years 1997/98 to 2011/12, from 2.5 to 4.9 per 10,000 adults. Over the most recent five-year period (2007/08 to 2011/12), on average 20.8% [95% CI: 19.7% to 21.9%] of lumbar surgery patients met criteria for PPP. Rates of health care utilisation were significantly higher for patients with PPP across all types of care. Over two years following initial spine surgery, the mean cost difference between patients with and without PPP was £5,383 [95% CI: £4,872 to £5,916]. Over five and ten years following initial spine surgery, the mean cost difference between patients with and without PPP increased to £10,195 [95% CI: £8,726 to £11,669] and £14,318 [95% CI: £8,386 to £19,771], respectively. Extrapolated to the UK population, we estimate nearly 5,000 adults experience PPP after spine surgery annually, with each new cohort costing the UK NHS in excess of £70 million over the first 10 years alone.

Conclusions: Persistent pain affects more than one-in-five lumbar surgery patients and accounts for substantial long term health care costs. There is a need for formal, evidence-based guidelines for a coherent, coordinated management strategy for patients with continuing pain after lumbar surgery.

Keywords:

Persistent post-operative pain (PPP); Failed back surgery syndrome (FBSS); lumbar surgery; Clinical Practice Research Datalink (CPRD); Hospital Episode Statistics (HES)

Strengths and limitations of this study

- This is the first study to estimate the occurrence of PPP following lumbar surgery using a sample of surgical patients selected from routinely collected UK hospital and primary care data
- Our estimates of healthcare utilisation and costs are based on real world experiences of the full range of lumbar surgery patients found in clinical practice
- A limitation of using electronic medical records data is the classification of patients with PPP as there is a no specific diagnosis code or set of codes for the condition of PPP and our data do not contain information on pain scores commonly used to assess the existence and severity of chronic pain following recovery from surgery
- In contrast with previous studies that have relied on multiple assumptions regarding treatment patterns or on small and/or non-representative patient samples, we were able to calculate more precise estimates of PPP following lumbar surgery

INTRODUCTION

Persistent post-operative pain in lumbar surgery patients—more commonly known as failed back surgery syndrome (FBSS)—refers to chronic back and/or leg pain that continues or recurs in some patients following spinal surgery. It may be caused by one or a combination of factors including: residual or recurrent disc herniation, persistent post-operative compression of a spinal nerve, altered joint mobility, joint instability, postoperative myofascial pain development, scar tissue (fibrosis), and/or spinal muscular deconditioning.[1-3] Psychosocial factors that have been identified in this and other chronic post-surgical pain conditions include pre-operative anxiety, depression, poor coping strategies, and pain catastrophizing. Litigation and Worker's Compensation have also been associated with reports of ongoing pain.[4,5] Patients form a diverse group, with complex and varied aetiologies and symptoms.[6,7]

Authoritative publications, mainly large case series and clinical trials, report that 10-40% of all patients who undergo lumbar surgery develop some form of chronic post-operative pain.[8-16] The wide range of estimates reported reflect varying clinical experiences of different institutions and the small samples of patients on which these estimates are based. In 2013, Thompson took a mid-range estimate of 20% failure applied to a rate of lumbar surgery in the UK population of 5 per 10,000 people and concluded that there are approximately 6,000 new cases of PPP following spine surgery in the UK every year.[17] More precise estimates for the UK are not available.

Up-to-date, population-based estimates of incidence are required to keep pace with surgical advances and to inform health care system spending in this population. Using a formal and more rigorous epidemiological data-driven approach, we aim to provide robust estimates of the incidence and health care costs associated with PPP following lumbar surgery in the UK over a 15-year period, from 1997/98-2011/12.

METHODS

Setting and data sources

This study employs a retrospective cohort design using two linked UK databases: the Hospital Episode Statistics (HES) database and UK Clinical Practice Research Datalink (CPRD). A supplementary online appendix provides more detail on these data. Approval was granted by the Independent Scientific Advisory Committee for Medicines and Healthcare products Regulatory Agency (MHRA) on December 17, 2014 (ISAC Protocol 14-180R).

Study participants

Incidence of lumbar surgery was calculated on a patient-basis, as the number of patients aged 18 and above who underwent one or more lumbar procedures in a given fiscal year, expressed as a rate per 10,000 adults in the CPRD-HES linked dataset. Index operative procedures included any single procedure or combination of discectomy/microdiscectomy, excision of lumbar intervertebral disc, laminectomy, foraminotomy, lumbar decompression (or fenestration) or lumbar fusion (including all anterior and posterior approaches as well as combined approaches). Patients were required to have at least two years of follow up data to allow sufficient time to observe criteria for PPP following the index surgery.

Definition of Persistent Postoperative Pain

From our lumbar surgery cohort, we categorized each individual as a 'success' (i.e., no evidence of PPP) or 'failure' (i.e., evidence of PPP). Any one of the following three criteria, alone or in combination, were taken as evidence of pain continuing past the expected period for recovery following index lumbar surgery:

1. any additional lumbar surgery of any type occurring between 6-24 months post-index surgery;
2. a minimum of one pain-related physician visit in each of two consecutive quarters at any point during the 6-24 months post-index surgery identified using READ codes in CPRD or treatment specialty codes in the HES Outpatient file;
3. any other surgical intervention (e. g., neuromodulation, implantation of drug infusion delivery system) to address pain occurring at any time, not limited to 24 months after the index surgery, identified from either CPRD or the HES inpatient or outpatient datasets.

Prescription of analgesics (including opioids, non-steroidal anti-inflammatory drugs (NSAIDs), antidepressants or anticonvulsants/antiepileptic drugs used for pain, and other analgesic therapies for a period of at least 6 months from 6-24 months post-index) was not by itself considered evidence of persistent postoperative pain as patients may be prescribed analgesics for other painful conditions.

A minimum period of three months has been proposed for tissue healing after surgery and this time period is also used to define chronicity of pain.[18-20] We applied a more stringent, minimum six-month period after the index lumbar surgery for patients to recover from normal, expected postoperative pain. Any additional spine surgery that occurred during that period was assumed to be related to surgical complications of the index lumbar procedure, rather than treatment of PPP. The literature suggests that some patients initially appear to improve following lumbar surgery but later become increasingly bothered by pain.[4,6,21] Therefore, we allowed for a period of 18 months (6-24 months

post-index surgery) over which to evaluate evidence of unresolved, chronic pain based on recorded ongoing interventions.

Healthcare utilisation and costs

A standard cost-of-illness approach[22,23] was taken to estimate total healthcare costs from the perspective of the UK National Health Service (NHS). We classified all health care encounters into major categories of health care resource utilisation and assigned unit costs following standard practice for cost-of-illness and cost effectiveness research (see online-only supplementary information on cost methodology and unit cost tables). Consistent with other studies of resource utilisation among similar populations,[24] we estimated total cost per patient over 24 months for all patients in our study (excluding the cost of the index surgery). We then extended our analysis out to five and ten years post-index surgery among the subsets of patients with sufficient follow up data. To account for inflation and variations in pricing over time, 2013 unit costs were applied to all years. Total costs incorporated direct (including medical staff), indirect and overhead costs paid by the NHS. Finally, using these per patient estimates, we projected the total number of PPP cases in the UK annually and the associated costs to the NHS.

Statistical analyses

To estimate rates of PPP, we computed the number of patients who met our criteria for PPP as a percentage of all patients who underwent initial lumbar surgery within the time frame. The comparison group of no persistent post-operative pain was drawn from among lumbar surgery patients who fulfilled the 'no PPP' criteria. We used 1:1 propensity score matching (without replacement) based on patient's age at surgery, gender, year in which surgery took

place, type of initial surgery (fusion vs. decompression), and presence of each of seventeen comorbidities that comprise the Charlson Comorbidity index (CCI) using the greedy matching algorithm.[25-27]

We estimated healthcare utilisation over a two-year period for patients with PPP versus the matched controls and presented: (i) the proportion of patients who had a non-zero healthcare resource utilisation and the number of encounters by category (i.e., primary care, inpatient care, outpatient attendances, outpatient procedures, accident and emergency care, and prescriptions for pain medications), and (ii) costs among users of the respective type of services/events (in order to provide insight into the intensity of resource utilisation among users of these services). Next, we estimated total health care costs by category of health care utilisation for all patients. Finally, we estimated the cost attributable to PPP as the difference in total costs for all PPP patients versus no PPP controls over the time periods two, five and ten years post-index surgery.

Statistical significance of differences between patients with and without PPP were evaluated using Fisher's exact tests for categorical predictor variables and Wilcoxon tests for continuous predictor variables. The main analyses compared the matched PPP cases and controls using Fisher's exact tests for healthcare utilisation and bootstrapping for differences in average costs. All data manipulation and analyses were conducted using SAS software, Version 9.4 for Windows [SAS Institute, Cary NC].

Sensitivity analysis

In sensitivity analyses, we adjusted costs using generalised linear models (using log link and gamma distribution), extended estimating equations, and ordinary least squares.

RESULTS

Rates of lumbar surgery in HES (among patients with linked CPRD data)

From the linked CPRD-HES database, we identified 10,216 adults who underwent lumbar surgery from fiscal years 1997/98 through 2011/12 and who had at least 12 months of pre-surgery data (used to identify pre-surgical comorbid conditions and exclude those with previous lumbar surgery) and with 24 months follow up. Our denominator for each year included all patients within the linked CPRD/HES dataset with at least 36 months of follow-up to be comparable to the lumbar surgery group in that year. Incidence of PPP was adjusted to reflect the age and sex distribution of the UK population in each year of the study.[28] The age/sex adjusted rate of lumbar surgeries grew steadily from 2.41 per 10,000 in 1997/98 to reach a peak of 4.94 per 10,000 in 2010/11 before falling slightly in 2011/12 to 4.70 per 10,000 (Figure 1).

Percentage of lumbar surgery patients with persistent postoperative pain (cases)

Of the 10,216 adults undergoing lumbar surgery in fiscal years 1997/98-2011/12, 1,756 (17.2%; 95% CI: 16.5% to 17.9%) patients met our criteria for PPP. Among patients with PPP, 85.4% were prescribed pain medication for at least six months compared with 50.3% of patients who did not meet PPP criteria.

Figure 2 shows the impact on our estimates of PPP from including the HES outpatient data, available from 2008 onwards. The dotted line includes patients identified as having PPP using only the CPRD general practice file plus HES inpatient file. The solid line includes patients identified using these files plus the HES outpatient file, accredited as a National Statistic since 2008. The percentage of patients with PPP captured without the HES outpatient file was fairly stable over the entire 15-year study period, but doubles with the

inclusion of HES outpatient data. The percentage of patients with PPP early in the study period is likely to be underestimated as hospital pain clinic visits were not recorded. The more recent data is more likely to be reflective of current UK practice. On average, over the most recent five-year period, 20.8% [95% CI: 19.7% to 21.9%] of eligible patients met our criteria for PPP.

PPP cases versus lumbar surgery patients without PPP

Prior to matching, a comparison of patients with PPP versus those without showed that PPP patients were younger, more likely to be female and have a slightly higher comorbidity burden, as measured by the Charlson Comorbidity Index. After propensity score matching, as expected, there were no significant differences between the cases and controls (Table 1).

Table 1: Characteristics of lumbar surgery patients with and without PPP before and after selecting propensity score matched control group

	Before matching			After matching		
	No PPP n=8460	PPP n=1756	P value	No PPP n=1756	PPP n=1756	P value
Age at surgery (years), mean (sd)	53·6 (16·0)	52·9 (15·5)	0·044	52·1 (16·0)	52·9 (15·5)	0·16
Male, %	50·7	43·3	<0·001	43·0	43·3	0·86
Charlson Comorbidity Index (CCI), mean (sd)	1·1 (2·0)	1·2 (2·0)	0·002	1·1 (1·8)	1·2 (2·0)	0·06

P-values were based on Fisher's exact tests for categorical and Wilcoxon tests for continuous variables.

Health care utilisation and cost

Compared to patients without, those with PPP had significantly increased rates of health care utilisation for all health care encounter types. The difference was largest for inpatient hospital care at 77.5% for those with PPP versus 44.9% for those without. Patients with PPP were more than twice as likely as those without PPP to have had two or more inpatient stays in the two years following index surgery.

Amongst those who used care in each of these settings, costs were in most cases significantly greater in the presence of PPP. In particular, PPP was associated with a three-fold increase in average pain medication costs (£1,165 versus £382). Greater costs were also observed in inpatient, outpatient hospital and primary care settings, indicating greater intensity of resource utilisation for patients with PPP in each of these settings (Table 2). Comparing total costs for patients with PPP versus matched controls (no PPP) including both users and non-users of each service, we found that the mean additional cost attributable to PPP in the two years following surgery was £5,383 per patient (Table 3). Inpatient costs accounted for almost half (46.5%) of the cost differential and primary care contributed 26.9%.

When costs estimates were extended to five and ten-years following the index lumbar surgery, among patients with sufficient follow up data for each period, the difference in costs between patients with and without PPP increased. In total over five years following surgery, patients with PPP (n=894 cases) cost an additional mean of £10,195 [95% CI: 8,726 to 11,669], rising to a total mean cost differential of £14,318 [95% CI: 8,386 to 19,771] over 10 years (n=186 cases). Note that the difference may have been underestimated for patients who underwent surgery prior to the release of the HES outpatient files in 2003/04.

Table 2: Health care resource use and costs (2013 British Pounds) in the two year period following index surgery among users of services, cases (PPP) versus propensity score matched controls (no PPP)

	Health care utilisation		Costs among users only	
	No PPP (N=1756)	**PPP (N=1756)**	**No PPP**	**PPP**
	n (%)	**n (%)**	**mean (sd)**	**mean (sd)**
Any inpatient	788 (44·9)	1,361 (77·5) **	£3,678 (4,520)	£5,357 (5,282) **
0	968 (55·1)	395 (22·5)		
1	377 (21·5)	484 (27·6)		
2	192 (10·9)	351 (20·0)		
>2	219 (12·5)	526 (29·9)		
Any Outpatient attendances	1,510 (86·0)	1,606 (91·5) **	£783 (975)	£1,316 (1,149) **
0	246 (14·0)	150 (8·5)		
1 - 6	904 (51·5)	438 (24·9)		
7-12	349 (19·9)	512 (29·2)		
> 12	257 (14·6)	656 (37·4)		
Any Outpatient procedures	435 (24·8)	583 (33·2) **	£540 (817)	£664 (875) *
0	1321 (75·2)	1,173 (66·8)		
1	203 (11·6)	221 (12·6)		
2	86 (4·9)	116 (6·6)		
>2	146 (8·3)	246 (14·0)		
Any Accident & emergency	325 (18·5)	484 (27·6) **	£257 (193)	£265 (213) x
0	1,431 (81·5)	1,272 (72·4)		
1	205 (11·7)	306 (17·4)		
2	67 (3·8)	94 (5·4)		
>2	53 (3·0)	84 (4·8)		

Any Primary care	1,751 (99·7)	1,756 (100·0) *	£3,178 (2,560)	£4,616 (3,011) **
Number of primary care visits, mean (sd)	73.3 (57·8)	107.5 (68·3)		
Any pain drugs	1,699 (96·7)	1,750 (99·7) **	£382 (2,348)	£1,165 (4,349) **
Number of prescriptions, mean (sd)	70.1 (98·6)	104.9 (104·0)		

* < ·05; ** <·01 comparing rates of health care use (using Fisher's exact tests) and mean costs (based on bootstrapping) among patients with PPP vs. no PPP; PPP=persistent postoperative pain.

Table 3: Total 2-year costs (2013 British Pounds), cases (PPP) versus propensity score matched control cohort (no PPP)

	No PPP (N=1, 756) Mean (sd)	**PPP (N=1, 756) Mean (sd)**	**Difference**	**[95% CIs]**
Inpatient	£1,651 (3,537)	£4,152 (5,160)	£2,501	[2,202-2,811]
Outpatient attendances	£673 (944)	£1,204 (1,159)	£531	[456-604]
Outpatient procedures	£134 (469)	£221 (593)	£87	[51-121]
Accidents & emergency	£48 (130)	£73 (163)	£25	[15-35]
Primary care	£3,169 (2,562)	£4,616 (3,011)	£1,447	[1,263-1,661]
Pain medications	£370 (2,310)	£1,161 (4,342)	£791	[574-1,027]
Total costs	£6,044 (6,712)	£11,427 (9,304)	£5,383	[4,872-5,916]

Sensitivity analyses

Estimating the PPP cost differential with generalised linear models (using log link and gamma distribution), extended estimating equations, and ordinary least squares produced very similar results to the main analysis.

DISCUSSION

A total of 10,216 adults identified within the linked CPRD-HES database underwent lumbar spinal surgery between 1997/98 and 2011/12, with the rate of individuals receiving surgery approximately doubling over this time period. Using the criteria of additional lumbar surgery within 6-24 months, pain-related physician visits over at least two consecutive quarters within the same period, or other surgical intervention therapy at any time, we estimate that approximately one in five (20.8%; 95% CI: 18.5% to 23.0%) lumbar spine surgery patients in the UK experience persistent post-operative pain within two years of their index surgery. The costs of PPP patients over 10 years following lumbar surgery were more than 50% higher compared to those patients without ongoing pain.

Our estimate of PPP was conservative in that we did not include patients who had ongoing prescriptions for analgesic pain medications in the absence of other more rigorous indicators of back pain. If we had included any prescribing of pain medication, our estimate of post-lumbar surgery PPP incidence would have risen from 20.8% to 61.8%.

Our incidence estimate is consistent with a recent large Japanese study. Using internet-based survey data, the authors found that among 1,842 respondents who self-reported having undergone lumbar surgery in the past 10 years, 20.6% experienced ongoing pain.[29]

Strengths and limitations of this study

This study used routinely captured hospital and primary care data to investigate diagnoses and treatment patterns on a population sample of lumbar surgery patients. Hence, our observations are based on patterns of care for a large and representative group of patients undergoing treatment in real world settings. This enabled us to calculate more precise estimates of PPP following lumbar surgery; previous studies have relied on multiple

assumptions regarding treatment patterns or on randomised controlled clinical trial data with small, non-representative patient samples.

A limitation of using electronic medical records data is the classification of patients with PPP. There is a no specific diagnosis code or set of codes for the condition of PPP. Instead, our estimates are based upon presentation for further interventions, surgery and/or attendance at specialist pain clinics. The data do not contain information on pain scores commonly used to assess the existence and severity of chronic pain following recovery from surgery. Evidence on the persistence of pain for a period of at least six months in the year following surgery was, by necessity, inferred from data on receipt of therapies for chronic pain, referrals to pain specialists, etc. It is possible that some patients who had a successful outcome of back surgery experienced ongoing concurrent or new onset chronic pain from another source and were misclassified as having post-lumbar PPP.

Implications of our findings for policy and/or practice

Our findings are based on a broadly representative sample of the UK population undergoing lumber surgery. The mid-2012 population estimate of adults in the UK was 50.2 million.[30] Based on our estimates of lumbar surgery, we would predict that approximately 23,592 patients underwent initial lumbar surgery in the UK at the end of our study period. This equates to 4,907 adults (20.8%) with PPP following lumbar surgery annually in the UK and that the associated short term (2-year) costs of caring for PPP amount to approximately £26.4 million for each new annual cohort of PPP patients. Extending our horizon to cover 10 years following index surgery, we would predict that each new annual cohort of lumbar surgery patients experiencing PPP could cost the NHS approximately £70.3 million over the

first decade, with costs likely to continue accumulating over the remainder of the lifespan of members of that cohort.

Despite these large and ongoing costs, no formal guidelines to date have been put forward for the treatment of persistent pain after lumbar surgery. Our findings for patients with available follow-up data for two, five and ten years postoperatively suggest that PPP patients have significantly higher resource utilisation and that these costs continue for at least a decade following index surgery. Although our data contained too few patients with more than 10 years of follow up to extend our estimates beyond the initial decade, it is likely that the PPP cost differential persists into the long term particularly as patients' age. Our 10 year estimate is a censored estimate of the total lifetime cost of managing these patients.

The growth in rates of lumbar surgery suggests that the numbers of patients living with ongoing pain in the UK is substantial and growing. In addition to the NHS cost burden, we know from other studies that these patients experience significant reduction in health-related quality of life. For example, in the PROCESS study, mean baseline EQ5D index score among lumbar surgery patients with ongoing pain was 0.14,[31] which is much lower than has been documented for other patient populations with chronic diseases, including cancer.[32] There is a need for a coherent management strategy for primary care staff, pain specialists and surgeons to offer to these patients. High quality primary studies are urgently required to provide more understanding of the treatment and recovery trajectory of this patient group.

CONCLUSION

Utilising routinely-collected clinical data, this study shows that approximately one-in-five lumbar spine surgery patients in the UK experience PPP (also known as, 'failed back surgery syndrome'). PPP is associated with higher rates of resource utilisation and with increased intensity of resource use in the inpatient, outpatient, and primary care settings. The costs to the NHS of treating patients with PPP are substantive and remain elevated over time, highlighting the need for formalized national guidelines for the management of patients with lumbar pain pre- and post-surgery.

FIGURE LEGENDS

Figure 1. Age- and sex-adjusted incidence of lumbar surgery in linked CPRD-HES, rates per 10,000 adults

Figure 2. Percentage of patients with PPP by year of index lumbar surgery

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Contributors: SE, AM, RST and SW conceived and designed the study originally; JB and DC joined the study team part way through the analysis planning phase and helped to shape the final study design. SW acquired the data. CNC, TCK, MS, TT and SW developed the analysis plan. TCK, MS and SW analysed the data. SW drafted the manuscript. JB, DC, SE, TCK, AM, MS, RST, TT and SW revised the manuscript. All authors contributed intellectually to the interpretation of the data, participated in manuscript development and approved the final version. SW is the guarantor.

Competing Interests: At the time of the study, CNC was employed by PHMR, LLC, who received consulting fees from Medtronic. SW, MS and TCK received consulting fees from PHMR, LLC. RST, AM, JB, DC and SE received consulting fees from Medtronic as advisors to the project. TST has no competing interests associated with this work.

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Data sharing: No additional data are available.

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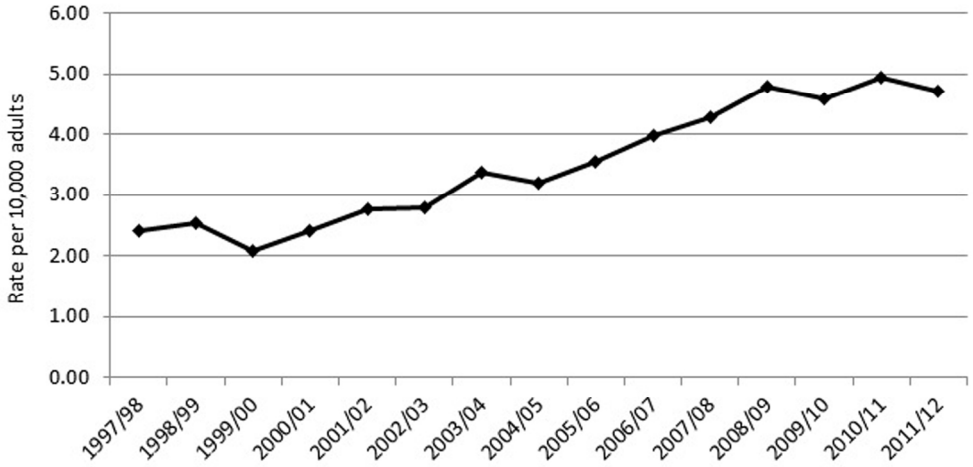

Age- and sex-adjusted incidence of lumbar surgery in linked CPRD-HES, rates per 10,000 adults

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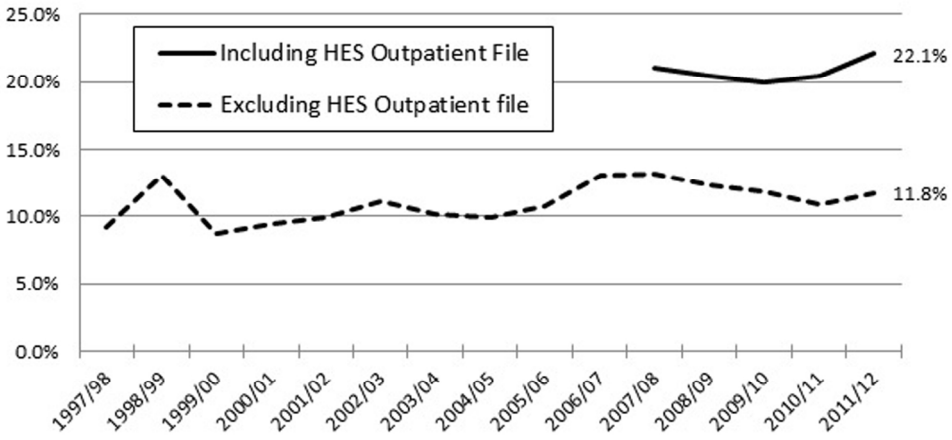

Percentage of patients with PPP by year of index lumbar surgery

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Online Supplementary Material

Description of the databases

Hospital Episode Statistic—The Health and Social Care Information Centre (HSCIC) now NHS Digital, is the national body for mandatory data collection from all hospitals in England. Data are captured regardless of payer status (e.g., private or government) or geographic residency of the patient.[1]

Clinical Practice Research Datalink—CPRD has records for about 5.5 million currently registered patients and approximately 13 million patients 'ever' registered. These data are collected from approximately 590 general practices and cover 8% of the UK population. The patient population captured in the CPRD has been shown to be broadly representative of the demographic breakdown of the UK population and the quality and completeness of the data have been well-documented.[2–7] These data have been used to answer a wide range of health care quality and resource utilisation questions, including studies of neuropathic pain.[8–11] Linkage to HES is possible for approximately half of patients in CPRD-registered practices.

Detailed methods for calculating costs of care by encounter type

Primary care: Primary care was grouped into major types of consultation as in previous studies.[12–18] This included clinical consultations, surgery visits, telephone consultations, out of hour visits, administrative visits and other. The category 'other' included encounters as 'repeat issue' or 'third party consultation'. We created separate indicators for each category. Unit costs associated with these 6 categories were assigned to each unique consultation from UK national average estimates produced by the Personal Social Services Research Unit.[19]

Outpatient attendances and procedures: HES outpatient data were available from 2003/04 onwards. However, the outpatient data tables were not accredited as a National Statistic prior to 2008.[1] We distinguished between regular outpatient attendances and outpatient attendances that included an interventional procedure. Unit costs for both types of attendance were taken from the NHS 'Reference Costs' publication[20] and were assigned by treatment specialty and by first versus follow-up visit.

Inpatient care: Stays in the HES inpatient dataset were classified as elective inpatient stays, long (>1 day) non-elective inpatient stays, short non-elective inpatient stays, day cases and regular day or night admissions. To allow costs to vary with clinical complexity of the patient, stays were grouped by NHS Healthcare Resource Groups, using the HRG4+ 2012-13 Reference Costs Grouper software[21] before applying reference costs for each stay category from the national schedule.[20] This was preferred over costing by simple per diem unit costs multiplied by number of inpatient days, which treats all inpatient encounters as equal in intensity of resources used. The HRG grouping approach allows for the inclusion of costs associated with excess bed days. Costs for cases that were not assigned to an HRG (13.4%) were estimated using the average cost by type of service. Total inpatient costs were obtained by aggregating across subcategories of inpatient care.

Accident & Emergency (A&E): Both CPRD and HES datasets contain information about A&E attendances for patients who were referred to the emergency department or who self-referred and were subsequently admitted to the hospital. A&E attendances were costed using the NHS reference costs.[20] and varied depending on whether attendance resulted in an inpatient admission.

Pain medications: We used the same set of prescription drug codes for pain-related analgesia, including opioids, non-steroidal anti-inflammatory drugs or NSAIDs, selected antidepressants with analgesic properties, anticonvulsant/antiepileptic drugs used for pain, and other analgesic therapies. The selected list was informed by a published randomized controlled trial of spinal cord stimulation for treatment of PPP following lumbar surgery.[22,23] We amended the list to add all new analgesic medications marketed in the intervening period. Each medication was costed by strength and formulation/route assigning corresponding unit costs from the British National Formulary[24] and multiplying by the quantity prescribed using the a methodology similar to that employed in the economic analysis of the PROCESS trial.[25]

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Unit Costs (2013 British Pounds**)**

Table A. Unit costs of primary care

Type of consultation	Unit cost
Clinic	£66
Telephone	£27
Out of hours /night visits/at home/emergency	£114
Administrative	£27
Surgery	£45
Other	£66

Source: Curtis L. Unit Costs of Health and Social Care 2013. Canterbury, Personal Social Services Research Unit, Kent, 2013.

Table B. Unit costs of outpatient attendances

Treatment specialty code[1]	First or follow up attendance	Unit cost
100	1	117.83
100	2	112.91
101	1	106.53
101	2	77.71
102	1	371.32
102	2	338.77
103	1	129.79
103	2	100.75
104	1	123.48
104	2	142.34
105	1	218.97
105	2	153.76
106	1	120.58
106	2	108.09
107	1	236.32
107	2	139.81
108	1	198.73
108	2	198.73
110	1	107.04
110	2	70.16
120	1	96.54
120	2	83.51
130	1	163.94
130	2	75.16
140	1	124.67
140	2	100.81
141	1	170.57
141	2	93.64
142	1	159.98
142	2	95.71
143	1	156.19
143	2	106.51
144	1	111.03

144	2	117.49
145	1	198.73
145	2	198.73
148	1	198.73
150	1	194.55
150	2	135.68
160	1	99.24
160	2	62.93
161	1	265.93
161	2	211.68
170	1	308.85
170	2	304.11
171	1	4746.99
171	2	154.56
172	1	292.12
172	2	207.78
173	1	251.25
173	2	215.31
174	1	499.54
174	2	334.03
180	1	183.25
180	2	240.18
190	1	75.88
190	2	69.3
191	1	126.7
191	2	98.88
192	1	1564.27
192	2	105.87
199	1	198.73
199	2	198.73
211	1	242.18
211	2	114.72
214	1	142.05
214	2	118.04
215	1	114.82
215	2	101.02
216	1	134.6
216	2	129.33
217	1	378.76
217	2	320.99
218	2	182.7
219	1	154.25
219	2	99.17
222	1	134.98
251	1	148.27

251	2	109.13
252	1	808.96
252	2	206.14
253	1	225.36
253	2	202.28
255	1	158.35
255	2	152.29
257	1	122.58
257	2	81.29
258	1	172.74
258	2	123.73
263	1	263.09
263	2	187.77
290	1	198.73
290	2	198.73
291	1	634.2
300	1	146.55
300	2	96.03
301	1	124.89
301	2	101.07
302	1	168.86
302	2	110.76
303	1	165.82
303	2	126.05
304	1	53.89
304	2	50.71
305	1	145.79
305	2	150.83
306	1	190.9
306	2	173.07
307	1	200.18
307	2	94.83
308	1	238.45
308	2	255.3
309	1	525.32
309	2	832.36
310	1	75.62
310	2	67.67
311	1	425.08
311	2	292.45
313	1	137.1
313	2	118.89
314	1	367.82
314	2	130.29
315	1	179.78

315	2	142.69
316	1	245.45
316	2	138.43
317	1	159.7
317	2	140.63
318	1	198.73
318	2	198.73
320	1	137.09
320	2	114.01
321	1	302.22
321	2	134.05
322	1	88.47
322	2	98.32
323	1	331.36
323	2	266.46
324	1	39.54
324	2	21.44
325	2	117.1
327	1	108.22
327	2	49.75
328	1	170.91
328	2	143.91
329	1	202.33
329	2	155.29
330	1	82.13
330	2	76.69
340	1	206.8
340	2	127.15
341	1	84.75
341	2	90.78
342	1	87.71
342	2	60.6
343	2	228.07
350	1	136.93
350	2	166.5
352	1	277.91
352	2	327.81
360	1	93.15
360	2	67.16
361	1	2206.91
361	2	138.42
370	1	112.27
370	2	96.08
371	1	122.12
371	2	686.83

400	1	188.02
400	2	131.33
401	1	425.93
401	2	160.19
410	1	155.13
410	2	110.46
420	1	134.13
420	2	135.54
421	1	567.67
421	2	389.2
422	2	191.85
430	1	212.26
430	2	185.11
450	1	195.36
450	2	121.81
460	1	167.95
460	2	166.26
499	1	198.73
499	2	198.73
501	1	110.93
501	2	89.39
502	1	117.31
502	2	93.87
503	1	229.88
503	2	231.8
560	1	75.7
560	2	66.44
600	1	198.73
620	1	198.73
650	1	54.95
650	2	41.56
651	1	84.46
651	2	71.15
652	1	78.15
652	2	51.01
653	1	66.4
653	2	61.9
654	1	73.24
654	2	74.03
655	1	53.07
655	2	54.2
656	1	169.03
656	2	120.2
657	2	198.73
658	1	198.73

658	2	198.73
662	1	62.65
662	2	63.94
700	1	198.73
700	2	198.73
710	1	226.27
710	2	129.04
711	1	529.63
711	2	267.51
712	1	198.73
712	2	198.73
713	1	232.48
713	2	456.92
715	1	8.92
715	2	198.73
721	1	198.73
721	2	198.73
722	1	90.12
722	2	136.53
800	1	130.99
800	2	92.94
810	1	198.73
810	2	198.73
811	1	119.98
811	2	403.02
812	1	61.26
812	2	30.97
820	1	198.73
820	2	198.73
822	1	80.6
822	2	73.21
823	1	198.73
823	2	198.73
824	1	198.73
830	1	198.73
830	2	198.73
831	1	198.73
831	2	198.73
840	1	82.99
840	2	70.27
900	1	198.73
900	2	198.73
901	1	198.73
901	2	198.73
902	1	198.73

902	2	198.73
904	1	198.73
904	2	198.73
950	1	198.73
950	2	198.73
960	1	198.73
960	2	198.73

Source: Department of Health. Reference Costs 2012-13. Available online: https://www.gov.uk/government/publications/nhs-reference-costs-2012-to-2013.
Note(1): For a description for specialty codes see: https://www.gov.uk/government/collections/nhs-reference-costs.

Table C. Unit costs of outpatient procedures

Treatment specialty code[1]	First or follow up attendance	Unit Cost
100	1	$207.24
100	2	$207.24
101	1	$149.80
101	2	$149.80
102	1	$316.02
102	2	$316.02
103	1	$183.41
103	2	$183.41
104	1	$173.56
104	2	$173.56
105	1	$253.18
105	2	$253.18
106	1	$152.52
106	2	$152.52
107	1	$168.42
107	2	$168.42
110	1	$150.11
110	2	$150.11
120	1	$143.16
120	2	$143.16
130	1	$132.29
130	2	$132.29
140	1	$202.87
140	2	$202.87
141	1	$182.03
141	2	$182.03
143	1	$146.28
143	2	$146.28
144	1	$174.41
144	2	$174.41
150	1	$202.90
150	2	$202.90
160	1	$138.64
160	2	$138.64
161	2	$171.23
170	1	$198.98
170	2	$198.98
172	1	$208.25
172	2	$208.25
173	1	$260.51
173	2	$260.51
174	2	$468.09
180	1	$137.83

180	2	$137.83
190	1	$100.33
190	2	$100.33
191	1	$137.73
191	2	$137.73
211	2	$82.55
214	1	$117.67
214	2	$117.67
215	1	$128.13
215	2	$128.13
216	1	$163.31
216	2	$163.31
219	1	$115.64
252	2	$387.87
253	2	$229.43
255	1	$190.98
255	2	$190.98
257	1	$113.60
257	2	$113.60
258	1	$139.67
258	2	$139.67
263	2	$389.56
300	1	$201.64
300	2	$201.64
301	1	$213.32
301	2	$213.32
302	1	$201.80
302	2	$201.80
303	1	$191.08
303	2	$191.08
304	1	$87.00
304	2	$87.00
306	1	$279.18
306	2	$279.18
307	1	$184.33
307	2	$184.33
308	1	$3,808.25
308	2	$3,808.25
310	1	$199.79
310	2	$199.79
311	2	$312.55
313	1	$129.23
313	2	$129.23
314	1	$310.94
314	2	$310.94

315	1	$218.81
316	1	$238.93
316	2	$238.93
317	1	$201.90
317	2	$201.90
320	1	$161.38
320	2	$161.38
321	1	$217.81
323	1	$202.51
323	2	$202.51
324	1	$75.75
324	2	$75.75
327	1	$254.11
327	2	$254.11
328	1	$274.25
328	2	$274.25
329	1	$151.74
329	2	$151.74
330	1	$144.10
330	2	$144.10
340	1	$183.78
340	2	$183.78
341	1	$129.66
341	2	$129.66
342	1	$133.03
342	2	$133.03
350	1	$220.19
350	2	$220.19
352	1	$321.96
360	1	$255.02
360	2	$255.02
361	1	$714.11
361	2	$714.11
370	1	$216.20
370	2	$216.20
371	2	$145.89
400	1	$227.56
400	2	$227.56
401	1	$168.22
401	2	$168.22
410	1	$155.89
410	2	$155.89
420	1	$204.63
420	2	$204.63
430	1	$225.07

430	2	$225.07
450	1	$248.44
450	2	$248.44
460	1	$135.57
460	2	$135.57
501	1	$169.90
501	2	$169.90
502	1	$209.90
502	2	$209.90
503	1	$171.64
503	2	$171.64
560	1	$137.23
560	2	$137.23
650	1	$204.29
650	2	$204.29
651	1	$390.57
651	2	$390.57
652	1	$278.72
652	2	$278.72
653	1	$298.24
653	2	$298.24
654	1	$535.00
654	2	$535.00
655	1	$141.38
655	2	$141.38
656	1	$116.18
656	2	$116.18
662	1	$101.20
662	2	$101.20
710	1	$739.15
710	2	$739.15
713	1	$96.61
800	1	$240.80
800	2	$240.80
811	1	$487.37
811	2	$487.37
812	1	$176.07
812	2	$176.07
822	1	$51.08
822	2	$51.08
840	1	$232.49
840	2	$232.49

Source: Department of Health. Reference Costs 2012-13. Available online: https://www.gov.uk/government/publications/nhs-reference-costs-2012-to-2013.
Note(1): For a description for specialty codes, see: https://www.gov.uk/government/collections/nhs-reference-costs.

Table D. Inpatient unit costs by HRG

FCE_HRG	Unit Cost
AA02C	£13,543.69
AA02D	£9,098.19
AA02E	£14,942.99
AA03C	£10,996.12
AA03D	£5,129.92
AA04C	£16,033.24
AA05D	£8,433.21
AA06C	£17,411.32
AA06E	£8,824.69
AA06F	£8,115.05
AA07C	£13,079.18
AA07D	£14,303.06
AA08C	£6,390.61
AA08D	£7,680.18
AA09C	£14,803.38
AA09D	£7,495.31
AA09E	£6,550.19
AA10Z	£7,587.79
AA11Z	£11,682.94
AA12C	£3,837.17
AA12D	£8,361.61
AA12E	£6,777.98
AA13C	£9,904.20
AA13D	£7,445.59
AA14Z	£4,991.88
AA15C	£10,826.07
AA15D	£8,081.22
AA15E	£7,780.20
AA16Z	£16,019.03
AA17C	£13,293.07
AA17D	£10,625.08
AA18C	£7,801.23
AA18D	£5,120.91
AA19D	£430.38
AA19E	£4,908.06
AA20C	£5,435.30
AA20D	£1,500.60
AA21C	£3,978.43
AA21D	£7,093.43
AA21E	£807.06
AA21F	£5,543.01
AA21G	£869.99
AA22C	£7,390.09

AA22D	£4,932.54
AA22E	£4,022.77
AA22F	£2,315.96
AA22G	£2,302.17
AA23D	£5,085.44
AA23E	£3,408.37
AA23F	£3,091.88
AA23G	£759.46
AA24C	£5,670.86
AA24D	£4,219.40
AA24E	£564.33
AA24F	£2,785.07
AA24G	£2,394.94
AA24H	£619.48
AA25C	£6,997.51
AA25D	£4,458.37
AA25E	£3,208.93
AA25F	£507.84
AA25G	£509.60
AA26C	£6,545.97
AA26D	£4,241.63
AA26E	£2,871.27
AA26F	£496.75
AA26G	£488.50
AA26H	£432.32
AA27Z	£4,322.88
AA28C	£5,714.13
AA28D	£450.69
AA28E	£2,395.84
AA28F	£1,821.09
AA29C	£2,966.01
AA29D	£1,979.55
AA29E	£1,538.58
AA29F	£508.78
AA30C	£3,103.55
AA30D	£2,218.05
AA30E	£2,673.24
AA30F	£2,177.01
AA31C	£1,981.18
AA31D	£2,978.14
AA31E	£1,115.47
AA32Z	£328.94
AA33C	£537.33
AA34C	£1,432.92
AA34D	£1,405.95

AA35A	£10,431.32
AA35B	£11,333.42
AA35C	£5,727.76
AA35D	£4,024.58
AA35E	£3,123.14
AA35F	£2,757.17
AA37Z	£5,109.45
AA38Z	£15,151.50
AB02Z	£904.97
AB03Z	£827.35
AB04Z	£704.04
AB05Z	£570.44
AB06Z	£619.59
AB07Z	£11,122.03
AB08Z	£667.16
AB09Z	£575.49
AB10Z	£508.69
AB11Z	£155.77
BZ01A	£1,124.52
BZ01B	£1,109.53
BZ02A	£1,574.51
BZ02B	£887.91
BZ02C	£865.82
BZ03A	£1,006.92
BZ03B	£981.66
BZ04A	£323.46
BZ04B	£262.68
BZ05A	£2,445.85
BZ05B	£3,059.31
BZ06B	£2,069.08
BZ06C	£1,088.93
BZ06D	£970.28
BZ07B	£918.10
BZ07C	£5,370.68
BZ07D	£793.54
BZ07E	£676.73
BZ08C	£4,056.93
BZ08D	£2,845.03
BZ09C	£1,388.89
BZ09D	£1,387.95
BZ10C	£658.41
BZ10D	£614.48
BZ11A	£5,105.46
BZ11B	£2,473.14
BZ12A	£2,645.63

BZ12B	£2,394.69
BZ13A	£1,969.42
BZ13B	£952.30
BZ14A	£1,573.42
BZ15C	£1,335.33
BZ15D	£1,273.00
BZ16A	£1,216.46
BZ17A	£1,592.26
BZ17B	£2,275.41
BZ18A	£1,077.58
BZ18B	£1,139.77
BZ19A	£609.27
BZ19B	£403.55
BZ20A	£2,323.62
BZ20B	£2,270.07
BZ21A	£3,286.41
BZ21B	£2,128.24
BZ21C	£2,089.76
BZ22A	£989.08
BZ22B	£4,276.26
BZ23Z	£1,380.31
BZ24D	£2,960.73
BZ24E	£2,491.24
BZ24F	£396.58
BZ24G	£363.46
CZ01V	£3,310.76
CZ01Y	£1,713.06
CZ02T	£2,074.72
CZ02W	£841.34
CZ02X	£1,726.61
CZ02Y	£620.22
CZ03V	£3,325.97
CZ03Y	£2,926.86
CZ04P	£13,947.08
CZ04Q	£10,048.87
CZ05S	£1,700.15
CZ05T	£1,481.12
CZ05V	£1,607.39
CZ05Y	£1,154.04
CZ07O	£9,572.39
CZ07P	£5,920.08
CZ07Q	£6,080.67
CZ08S	£960.16
CZ08T	£847.88
CZ08V	£772.64

CZ08Y	£740.72
CZ09U	£2,774.15
CZ09V	£2,550.10
CZ09Y	£1,040.91
CZ10U	£2,990.26
CZ10V	£2,952.58
CZ10Y	£2,917.72
CZ11Z	£5,538.98
CZ12U	£770.65
CZ12V	£1,494.26
CZ12Y	£627.38
CZ13U	£1,679.89
CZ13V	£1,821.94
CZ13Y	£1,232.52
CZ14U	£2,684.40
CZ14V	£2,324.79
CZ14Y	£2,308.36
CZ15N	£3,253.82
CZ15Q	£3,323.56
CZ16N	£2,121.04
CZ16Q	£2,098.25
CZ17U	£3,631.39
CZ17V	£4,167.67
CZ17Y	£1,076.59
CZ18R	£5,276.95
CZ19Z	£8,743.50
CZ21V	£1,211.53
CZ21Y	£450.63
CZ22W	£2,042.00
CZ22X	£475.68
CZ22Y	£490.02
CZ23W	£2,767.72
CZ23X	£425.39
CZ23Y	£462.17
CZ24O	£5,062.41
CZ24P	£1,839.99
CZ24Q	£1,682.02
CZ25A	£21,234.63
CZ27Z	£2,883.18
CZ28Z	£3,854.04
CZ30Y	£406.03
CZ31Y	£394.31
CZ32Y	£505.20
CZ33Y	£534.06
CZ34Y	£444.10

CZ37U	£863.39
CZ37Y	£533.18
CZ38Y	£358.12
CZ39U	£1,005.08
CZ39Y	£818.58
CZ40Y	£681.47
CZ41U	£935.45
CZ41Y	£771.78
CZ42U	£698.00
CZ42Y	£1,720.18
DZ02D	£11,314.15
DZ02E	£8,231.01
DZ02F	£6,988.70
DZ02G	£6,230.44
DZ06Z	£972.56
DZ07A	£630.26
DZ07B	£1,358.95
DZ08Z	£1,220.91
DZ09D	£4,418.94
DZ09E	£3,223.47
DZ09F	£2,491.66
DZ09G	£1,940.38
DZ09H	£464.93
DZ10E	£5,451.32
DZ10F	£608.73
DZ10G	£502.65
DZ11D	£5,484.90
DZ11E	£4,135.26
DZ11F	£4,218.80
DZ11G	£2,315.80
DZ11H	£484.40
DZ11J	£1,374.20
DZ12C	£486.49
DZ12D	£468.78
DZ12E	£2,166.80
DZ12F	£2,073.32
DZ13A	£0.00
DZ13B	£0.00
DZ14C	£4,061.79
DZ14D	£3,188.14
DZ14E	£568.87
DZ15G	£1,596.80
DZ15H	£2,522.95
DZ15J	£1,804.60
DZ15K	£435.23

DZ15L	£413.76
DZ16E	£3,000.27
DZ16F	£514.36
DZ16G	£1,765.57
DZ17E	£4,098.24
DZ17F	£3,183.93
DZ17G	£2,680.99
DZ17H	£502.54
DZ17J	£1,599.15
DZ17K	£586.05
DZ18B	£751.07
DZ18C	£700.20
DZ19D	£446.58
DZ19E	£1,610.16
DZ19F	£431.65
DZ19G	£408.33
DZ20A	£3,002.65
DZ20B	£490.85
DZ20C	£1,664.30
DZ21A	£427.38
DZ21M	£3,374.69
DZ21N	£2,305.75
DZ21P	£2,015.09
DZ21Q	£692.34
DZ21R	£2,993.25
DZ21S	£606.43
DZ21T	£505.73
DZ21U	£1,459.17
DZ22D	£4,803.90
DZ22E	£3,418.05
DZ22F	£2,486.32
DZ22G	£469.13
DZ22H	£1,450.76
DZ22J	£391.85
DZ23E	£3,226.48
DZ23F	£2,174.92
DZ23G	£1,625.01
DZ24D	£5,787.51
DZ24E	£4,282.12
DZ24F	£3,140.59
DZ24G	£578.16
DZ24H	£450.46
DZ25C	£3,095.55
DZ25D	£509.53
DZ25E	£519.49

DZ25F	£581.11
DZ26C	£3,795.37
DZ26D	£2,187.89
DZ26E	£1,930.52
DZ26F	£462.29
DZ27G	£3,251.14
DZ27H	£3,887.07
DZ27J	£2,806.15
DZ27K	£1,097.13
DZ27L	£1,620.63
DZ28A	£393.83
DZ28B	£964.57
DZ29C	£5,647.22
DZ29D	£2,140.23
DZ29E	£2,146.28
DZ29F	£1,890.68
DZ30Z	£400.44
DZ37A	£1,211.51
DZ38Z	£338.22
DZ39Z	£0.00
DZ40Z	£582.91
DZ44Z	£738.51
DZ49Z	£114.14
DZ50Z	£675.07
DZ51Z	£19,257.08
DZ53A	£7,648.90
DZ53B	£5,152.55
DZ53C	£4,134.64
DZ53D	£1,011.87
DZ53E	£3,512.05
DZ53F	£3,377.67
DZ54Z	£2,950.88
EA02Z	£46,293.95
EA03A	£1,418.75
EA03B	£5,610.75
EA03C	£1,964.40
EA03D	£1,844.97
EA03E	£2,659.07
EA05A	£7,438.96
EA05B	£5,095.11
EA05C	£2,177.15
EA05D	£1,994.17
EA07B	£4,846.77
EA07C	£5,096.04
EA11B	£1,630.04

EA12B	£14,777.82
EA12C	£14,528.01
EA12D	£13,905.13
EA14A	£14,538.70
EA14B	£10,487.59
EA14C	£8,991.28
EA14D	£8,622.56
EA16A	£12,763.86
EA16B	£10,687.50
EA16C	£9,983.10
EA16D	£9,172.70
EA17A	£13,173.21
EA17B	£11,208.21
EA17C	£9,696.82
EA17D	£467.44
EA19B	£11,722.26
EA19C	£10,750.08
EA20A	£18,302.57
EA20B	£12,150.96
EA20C	£9,542.71
EA22Z	£13,738.01
EA29A	£5,904.41
EA29B	£5,025.82
EA29C	£2,820.75
EA31A	£7,214.31
EA31B	£2,192.49
EA31C	£3,237.70
EA31D	£1,970.40
EA35A	£5,597.66
EA35B	£3,896.24
EA35C	£1,462.02
EA35D	£1,617.66
EA36D	£5,695.43
EA36E	£1,128.29
EA36F	£2,325.68
EA36G	£1,038.78
EA36H	£1,618.88
EA39A	£6,794.69
EA39B	£1,992.40
EA39C	£4,177.28
EA40Z	£1,085.85
EA44A	£798.64
EA44B	£824.66
EA45Z	£718.96
EA47Z	£1,353.19

EA48Z	£3,167.03
EA49A	£7,769.81
EA49B	£5,196.60
EA49C	£2,980.40
EA49D	£2,435.71
EA51A	£15,158.11
EA51B	£12,797.00
EA51C	£11,391.21
EA51D	£10,836.08
EA52A	£18,634.08
EA52B	£13,979.79
EA52C	£12,498.92
EA53Z	£15,953.72
EA54A	£3,227.00
EA54B	£3,128.34
EA55B	£1,789.23
EA56A	£18,143.90
EA56B	£16,681.16
EA56C	£14,173.03
EA57A	£6,310.53
EB02B	£3,914.06
EB02C	£805.79
EB03A	£4,509.35
EB03B	£3,676.84
EB03C	£506.59
EB03D	£2,668.50
EB03E	£1,875.30
EB04Z	£463.66
EB05A	£2,874.35
EB05B	£2,184.22
EB05C	£1,528.41
EB06A	£4,298.50
EB06B	£3,799.20
EB06C	£2,859.23
EB06D	£537.84
EB07A	£3,670.91
EB07B	£617.13
EB07C	£1,829.87
EB07D	£501.89
EB07E	£805.06
EB08A	£3,016.30
EB08B	£2,126.28
EB08C	£1,691.46
EB08D	£436.89
EB08E	£405.77

EB09A	£3,729.99
EB09B	£1,837.16
EB10B	£2,974.30
EB10C	£2,294.84
EB10D	£1,886.80
EB10E	£1,555.21
EB12A	£1,719.22
EB12B	£443.72
EB12C	£1,036.67
EB13A	£1,422.71
EB13B	£1,773.75
EB13C	£464.16
EB13D	£1,091.92
EB14A	£4,443.94
EB14B	£3,312.24
EB14C	£2,524.94
EB14D	£1,935.82
EB14E	£539.63
EB15B	£2,589.81
EB15C	£1,941.99
EC01A	£2,098.70
EC01B	£2,588.05
EC02A	£7,984.42
FZ12L	£9,926.15
FZ12M	£6,904.52
FZ12N	£1,531.42
FZ12P	£4,318.22
FZ12Q	£3,657.44
FZ12S	£4,580.50
FZ13C	£852.44
FZ13D	£1,870.37
FZ17E	£4,799.16
FZ17F	£3,478.78
FZ17G	£2,815.51
FZ18E	£1,315.66
FZ18G	£4,801.34
FZ18H	£1,475.10
FZ18J	£2,118.05
FZ18K	£1,957.43
FZ19A	£1,765.75
FZ20F	£5,792.05
FZ20G	£4,027.75
FZ20H	£3,110.30
FZ20J	£2,762.36
FZ20M	£2,928.55

FZ21C	£1,325.98
FZ21D	£1,890.25
FZ22B	£1,847.29
FZ22C	£3,143.31
FZ22D	£1,907.46
FZ22E	£1,428.31
FZ23A	£1,230.76
FZ23B	£843.25
FZ24G	£622.64
FZ24H	£758.74
FZ24J	£614.50
FZ27E	£5,649.44
FZ27F	£3,727.83
FZ27G	£2,464.19
FZ36G	£7,347.12
FZ36J	£5,089.85
FZ36K	£3,294.86
FZ36L	£2,265.82
FZ36M	£3,430.86
FZ36N	£496.42
FZ36P	£1,897.11
FZ36Q	£440.45
FZ37K	£8,305.66
FZ37L	£4,449.85
FZ37M	£4,244.10
FZ37N	£2,733.89
FZ37P	£476.43
FZ37Q	£1,871.80
FZ37R	£1,550.46
FZ37S	£1,415.93
FZ38G	£4,785.82
FZ38H	£2,929.46
FZ38J	£3,518.38
FZ38K	£2,505.58
FZ38L	£1,801.76
FZ38M	£2,680.46
FZ38N	£503.89
FZ38P	£448.22
FZ42A	£687.67
FZ49D	£5,744.77
FZ49E	£4,239.22
FZ49G	£496.46
FZ49H	£1,848.83
FZ50Z	£769.19
FZ51Z	£485.95

FZ52Z	£554.48
FZ53Z	£541.81
FZ54Z	£411.68
FZ55Z	£460.93
FZ56Z	£482.70
FZ57Z	£1,166.00
FZ58A	£725.78
FZ59Z	£345.86
FZ60Z	£396.91
FZ61Z	£429.29
FZ62A	£1,688.57
FZ63Z	£561.34
FZ64A	£607.05
FZ65Z	£654.68
FZ66C	£13,932.55
FZ66D	£8,189.81
FZ66E	£3,134.54
FZ66F	£5,589.72
FZ67C	£10,188.49
FZ67D	£6,012.88
FZ67E	£4,500.28
FZ67F	£3,790.60
FZ69C	£19,184.77
FZ70Z	£520.41
FZ71D	£5,958.86
FZ71F	£897.36
FZ71G	£1,603.20
FZ72Z	£2,031.30
FZ73C	£16,930.33
FZ73D	£13,373.95
FZ73E	£13,300.39
FZ73F	£8,743.87
FZ74C	£12,875.23
FZ74D	£9,334.53
FZ74E	£7,989.55
FZ74F	£6,883.99
FZ75C	£8,436.91
FZ75D	£6,312.07
FZ75E	£5,575.42
FZ76C	£6,792.07
FZ76D	£5,430.19
FZ77C	£5,412.39
FZ77D	£4,025.68
FZ77E	£3,485.39
FZ78B	£5,587.18

FZ79D	£9,964.10
FZ79E	£6,512.34
FZ80C	£18,886.63
FZ80D	£12,819.12
FZ80E	£9,764.70
FZ81C	£11,172.73
FZ81D	£8,308.93
FZ81E	£5,911.18
FZ83D	£4,751.89
FZ83H	£2,682.26
FZ83J	£4,204.90
FZ83K	£3,297.37
FZ84Z	£4,899.45
FZ85Z	£3,810.34
FZ87D	£6,128.11
FZ87E	£4,664.11
FZ87F	£3,847.01
FZ87G	£1,569.17
FZ88A	£700.60
FZ89Z	£2,229.68
FZ90A	£2,202.65
FZ90B	£1,318.05
FZ91A	£9,264.93
FZ91B	£6,032.02
FZ91C	£4,359.18
FZ91D	£2,890.07
FZ91E	£4,870.73
FZ91F	£3,450.95
FZ91G	£2,654.40
FZ91H	£2,056.39
FZ91J	£3,710.11
FZ91K	£2,687.17
FZ91L	£1,972.99
FZ91M	£452.22
FZ92A	£7,070.43
FZ92B	£5,711.23
FZ92C	£3,170.67
FZ92D	£4,713.67
FZ92E	£3,257.60
FZ92F	£2,534.24
FZ92G	£3,828.74
FZ92H	£541.51
FZ92J	£2,303.32
FZ92K	£1,943.25
GA01C	£20,422.28

GA03C	£13,933.17
GA03D	£10,037.67
GA03E	£9,194.81
GA04C	£16,609.58
GA04D	£7,471.19
GA05C	£9,309.58
GA05D	£6,948.45
GA06C	£7,033.98
GA06D	£944.47
GA07C	£6,248.27
GA07D	£5,063.49
GA07E	£3,758.99
GA10G	£3,175.90
GA10H	£3,934.88
GA10J	£2,671.09
GA10K	£2,382.68
GA10L	£6,192.54
GA10M	£4,218.23
GA10N	£3,505.81
GA12Z	£30,662.98
GA13A	£3,888.00
GA13B	£2,463.62
GB01C	£9,378.31
GB01D	£6,893.78
GB01E	£1,850.13
GB01F	£4,047.51
GB02D	£7,208.79
GB02E	£5,125.11
GB02F	£1,023.66
GB03C	£5,596.35
GB03D	£859.66
GB03E	£747.26
GB03F	£667.40
GB04D	£560.88
GB05F	£6,752.54
GB05G	£4,733.39
GB05H	£1,695.15
GB06E	£5,439.00
GB06F	£725.33
GB06G	£3,293.42
GB06H	£745.86
GB07Z	£707.32
GB09E	£849.83
GC01C	£5,495.74
GC01D	£3,084.11

GC01E	£580.59
GC01F	£1,918.60
GC12C	£5,930.69
GC12D	£3,897.48
GC12E	£2,851.69
GC12F	£2,931.29
GC12G	£3,100.63
GC12H	£2,465.63
GC12J	£1,990.09
GC12K	£1,349.62
GC17A	£7,854.48
GC17B	£5,758.54
GC17C	£4,004.99
GC17D	£4,066.71
GC17E	£3,565.00
GC17F	£2,682.50
GC17G	£3,152.24
GC17H	£2,479.59
GC17J	£1,931.82
GC17K	£490.50
HA11A	£12,489.07
HA11B	£8,705.32
HA11C	£7,543.60
HA12B	£7,961.26
HA12C	£2,365.05
HA13A	£7,980.41
HA13B	£6,388.99
HA13C	£5,386.68
HA14A	£7,615.80
HA14B	£4,830.20
HA14C	£3,698.78
HA21B	£9,571.84
HA21C	£5,722.80
HA22B	£8,629.92
HA22C	£4,906.88
HA23B	£6,921.55
HA23C	£1,683.05
HA24Z	£6,023.58
HA25B	£5,503.83
HA25C	£1,701.15
HA29Z	£903.09
HA31B	£6,156.89
HA31C	£4,013.69
HA32Z	£5,807.90
HA33Z	£4,246.83

HA34Z	£4,051.73
HA35Z	£1,252.41
HA39Z	£613.35
HA51Z	£1,688.69
HA52Z	£1,774.44
HA53Z	£1,989.39
HA54Z	£1,452.04
HA55Z	£1,546.57
HA56A	£1,434.10
HA56B	£2,107.93
HA61B	£4,889.56
HA61C	£4,082.81
HA62Z	£1,927.10
HA63Z	£1,115.96
HA69Z	£601.95
HA71B	£4,708.05
HA71C	£2,871.56
HA72Z	£2,527.75
HA73B	£1,402.82
HA73C	£948.45
HA79Z	£1,012.81
HA81A	£2,515.47
HA81B	£488.63
HA81C	£503.30
HA83A	£1,705.28
HA83B	£1,116.11
HA83C	£1,058.05
HA91Z	£3,861.39
HA92Z	£3,426.20
HA93Z	£1,495.98
HA94Z	£592.67
HA95Z	£921.30
HA96Z	£652.79
HA97Z	£1,971.17
HA99Z	£4,308.02
HB11A	£10,230.56
HB11B	£6,493.36
HB11C	£6,120.61
HB12A	£8,217.36
HB12B	£6,460.06
HB12C	£5,880.11
HB13Z	£4,333.10
HB14B	£4,932.98
HB14C	£1,262.27
HB15D	£4,462.35

HB15E	£2,583.33
HB15G	£2,606.19
HB16B	£6,806.20
HB16C	£954.36
HB19Z	£729.06
HB21A	£7,765.27
HB21B	£6,165.26
HB21C	£5,674.99
HB22B	£1,477.67
HB22C	£2,931.03
HB23B	£3,140.86
HB23C	£2,470.49
HB24B	£3,892.33
HB24C	£2,321.65
HB25D	£5,498.79
HB25E	£1,334.71
HB25F	£1,325.73
HB29Z	£572.44
HB31Z	£4,248.35
HB32A	£3,246.74
HB32B	£3,917.43
HB33D	£6,825.00
HB33E	£1,525.68
HB33G	£1,535.18
HB34D	£5,381.61
HB34E	£1,301.25
HB35B	£4,704.63
HB35C	£1,238.17
HB39Z	£744.65
HB51Z	£2,799.54
HB52B	£3,442.59
HB52C	£2,892.94
HB53Z	£2,521.75
HB54B	£1,345.17
HB54C	£1,383.40
HB55B	£979.82
HB55C	£1,028.29
HB56B	£4,042.02
HB56C	£1,190.46
HB59Z	£628.28
HB61B	£3,730.08
HB61C	£3,024.80
HB62B	£2,402.86
HB62C	£2,217.49
HB63Z	£2,279.40

HB69Z	£513.97
HB71B	£1,683.20
HB71C	£4,076.43
HB72Z	£1,496.34
HB73Z	£2,235.11
HB79Z	£599.59
HB91Z	£3,177.84
HB99Z	£959.72
HC01A	£14,243.80
HC01B	£7,662.28
HC01C	£6,586.51
HC02D	£14,329.41
HC02E	£6,437.15
HC02F	£5,341.63
HC03D	£4,039.63
HC03E	£5,624.29
HC03F	£4,332.23
HC04D	£7,075.95
HC04E	£4,405.29
HC04F	£3,656.35
HC05D	£9,266.83
HC05E	£6,461.23
HC05F	£841.48
HC06Z	£1,596.98
HC07A	£10,977.94
HC07B	£6,973.66
HC10Z	£402.17
HC11Z	£863.62
HC12Z	£636.73
HC20D	£5,496.59
HC20E	£3,836.73
HC20F	£2,994.39
HC20G	£2,361.26
HC21D	£15,961.04
HC21E	£4,759.89
HC26D	£760.81
HC26E	£695.56
HC26F	£683.46
HC27D	£4,996.22
HC27E	£3,245.03
HC27F	£2,369.57
HC27G	£505.17
HC28D	£10,324.42
HC28E	£7,109.83
HC28F	£4,011.42

HC28G	£3,421.42
HC29A	£441.63
HC29B	£420.45
HC30D	£5,990.65
HC30E	£3,016.77
HC31D	£7,351.68
HC31E	£4,906.91
HC31F	£4,743.18
HC31G	£646.72
HC32D	£533.04
HC32E	£478.69
HC32F	£462.15
HC40A	£21,410.92
HC40B	£15,985.84
HC41A	£8,891.94
HC41B	£7,031.53
HC42Z	£10,543.24
HC43Z	£9,261.06
HD21D	£3,417.26
HD21E	£2,589.77
HD21F	£1,862.62
HD21G	£406.97
HD21H	£1,522.69
HD23D	£6,584.68
HD23E	£544.27
HD23F	£413.08
HD23G	£431.89
HD23H	£424.66
HD23J	£432.54
HD24D	£4,665.17
HD24E	£3,569.75
HD24F	£2,453.16
HD24G	£2,226.71
HD24H	£403.46
HD25D	£643.63
HD25E	£707.35
HD25F	£3,725.69
HD25G	£3,231.34
HD25H	£2,710.61
HD26D	£521.16
HD26E	£2,403.23
HD26F	£458.48
HD26G	£430.37
HD39E	£4,225.92
HD39F	£3,041.80

HD39G	£2,492.79
HD39H	£1,921.15
HD40D	£8,531.13
HD40E	£4,343.94
HD40F	£3,539.32
HD40G	£2,744.69
HD40H	£377.65
HR07A	£5,970.80
HR07B	£7,470.47
HR07C	£8,876.42
HR08A	£5,420.64
HR08B	£6,744.73
HR08C	£10,303.59
HR09A	£5,588.98
HR09B	£7,825.23
HR09C	£15,557.92
JA12D	£5,353.82
JA12E	£3,576.57
JA12F	£2,672.39
JA12G	£4,076.51
JA12H	£2,304.75
JA12J	£1,283.25
JA12K	£497.76
JA12L	£1,294.77
JA13A	£2,487.08
JA13B	£1,797.83
JA13C	£407.72
JA14Z	£8,984.75
JA18Z	£654.24
JA19Z	£609.14
JA20D	£3,599.49
JA20E	£3,125.52
JA20F	£2,900.49
JA21A	£3,884.88
JA21B	£3,423.41
JA24D	£1,365.46
JA24E	£2,480.14
JA24F	£1,288.46
JA25Z	£2,262.30
JA26A	£4,397.62
JA26B	£3,674.96
JA26C	£3,476.29
JA27Z	£6,748.28
JA28Z	£11,072.09
JA30Z	£5,488.31

JB30C	£818.93
JB31A	£34,548.56
JB32A	£4,925.04
JB32B	£4,242.81
JB32C	£2,638.62
JB33A	£10,761.97
JB33B	£3,111.75
JB33C	£493.06
JC40Z	£10,970.68
JC41Z	£5,326.68
JC42A	£1,029.92
JC42B	£986.16
JC43A	£623.84
JC43B	£859.15
JC47A	£48.38
JD07A	£7,618.31
JD07B	£5,453.27
JD07C	£3,609.36
JD07D	£2,491.79
JD07E	£506.50
JD07F	£593.60
JD07G	£3,064.28
JD07H	£2,335.07
JD07J	£1,789.28
JD07K	£1,371.42
KA03C	£2,902.57
KA03D	£2,522.20
KA04B	£5,111.70
KA05C	£576.73
KA05D	£515.58
KA06C	£4,158.03
KA06D	£1,938.75
KA06E	£1,664.03
KA07A	£3,096.36
KA07B	£1,826.34
KA07C	£1,408.13
KA08A	£748.87
KA08B	£487.48
KA08C	£425.15
KA09C	£5,743.92
KA09D	£4,006.02
KA09E	£3,230.69
KB01C	£485.26
KB01D	£426.23
KB01E	£554.32

KB01F	£391.14
KB02G	£2,822.99
KB02H	£463.36
KB02J	£448.44
KB02K	£415.98
KB03C	£3,870.81
KB03D	£2,549.46
KB03E	£2,138.25
KB04Z	£1,958.24
KC04A	£507.03
KC04B	£267.75
KC05G	£4,544.43
KC05H	£4,024.18
KC05J	£3,070.54
KC05K	£2,244.14
KC05L	£462.93
KC05M	£1,062.38
KC05N	£1,305.90
LA02A	£20,798.61
LA03A	£18,205.21
LA04J	£6,115.86
LA04K	£4,428.48
LA04L	£3,268.28
LA04M	£2,125.60
LA04N	£4,874.17
LA04P	£3,495.46
LA04Q	£2,451.10
LA04R	£476.80
LA04S	£447.02
LA05Z	£785.01
LA07H	£5,969.44
LA07J	£4,527.07
LA07K	£3,248.23
LA07L	£3,936.57
LA07M	£548.46
LA07N	£2,227.42
LA07P	£490.22
LA08H	£3,805.42
LA08J	£2,949.90
LA08K	£3,920.89
LA08L	£3,231.83
LA08M	£342.15
LA08N	£300.99
LA08P	£2,137.26
LA09K	£3,184.56

LA09L	£2,469.46
LA09N	£2,843.00
LA09P	£1,797.58
LA09Q	£1,366.99
LA97A	£0.00
LB05E	£3,817.98
LB05F	£3,399.78
LB05G	£2,487.93
LB06J	£4,239.80
LB06K	£3,367.81
LB06L	£2,273.24
LB06M	£2,164.00
LB06N	£4,934.12
LB06P	£3,725.97
LB06Q	£2,341.83
LB06R	£445.60
LB06S	£1,243.65
LB09D	£713.76
LB10C	£6,918.01
LB10D	£5,302.30
LB12Z	£3,377.65
LB13C	£4,286.46
LB13D	£2,654.36
LB13E	£1,062.30
LB13F	£1,815.17
LB14Z	£769.18
LB15E	£487.60
LB16D	£2,930.21
LB16E	£2,186.91
LB16F	£2,130.46
LB16G	£2,546.28
LB16H	£1,804.13
LB16J	£1,514.76
LB16K	£396.56
LB17Z	£288.52
LB18Z	£385.29
LB19C	£3,153.41
LB19D	£2,028.35
LB19E	£2,645.85
LB19F	£347.75
LB19G	£796.40
LB20C	£2,565.35
LB20D	£1,601.59
LB20E	£2,201.68
LB20F	£450.12

LB20G	£1,127.74
LB21A	£5,469.42
LB21B	£5,236.04
LB22Z	£5,594.58
LB25D	£3,676.54
LB25E	£2,644.44
LB25F	£2,393.78
LB26A	£1,958.34
LB26B	£1,670.04
LB27Z	£586.81
LB28C	£2,160.84
LB28D	£1,401.77
LB28E	£2,657.64
LB28F	£458.42
LB28G	£1,305.66
LB29A	£3,861.40
LB33Z	£773.42
LB35C	£3,050.63
LB35D	£2,607.77
LB35E	£564.74
LB35F	£1,686.33
LB35G	£1,455.92
LB35H	£1,279.58
LB36Z	£506.12
LB37C	£2,070.92
LB37D	£422.65
LB37E	£385.23
LB38D	£2,104.76
LB38E	£1,609.14
LB38F	£472.22
LB38G	£1,665.80
LB38H	£324.41
LB39C	£10,837.55
LB39D	£9,429.91
LB40C	£2,743.54
LB40D	£1,964.20
LB40F	£1,450.39
LB40G	£465.77
LB42A	£428.18
LB43Z	£359.26
LB46Z	£6,952.52
LB47Z	£5,059.08
LB48Z	£2,479.57
LB49Z	£2,454.11
LB50Z	£4,903.03

LB51A	£1,897.63
LB51B	£1,534.97
LB52A	£6,607.34
LB52B	£2,242.84
LB53C	£1,467.66
LB53D	£1,763.33
LB54A	£1,116.61
LB54C	£1,468.27
LB55A	£683.35
LB55B	£943.14
LB56A	£1,026.29
LB56C	£1,543.16
LB57C	£2,176.85
LB57D	£476.21
LB58C	£2,190.53
LB58D	£413.21
LB59Z	£3,684.69
LB60C	£9,573.79
LB60E	£6,065.43
LB60F	£5,210.39
LB61C	£8,463.93
LB61D	£6,064.71
LB61E	£4,998.45
LB61F	£4,914.89
LB61G	£4,796.58
LB62C	£6,486.22
LB62D	£5,326.93
LB64C	£6,098.13
LB64D	£2,996.65
LB64E	£2,489.19
LB65C	£3,374.79
LB65D	£2,531.37
LB65E	£1,425.40
LB67C	£13,522.65
LB67D	£8,966.55
LB68A	£4,166.50
LB68B	£2,623.50
LB69Z	£7,763.84
LB70C	£3,045.32
LB70D	£2,615.13
LB72A	£409.36
LB72B	£801.53
LB74Z	£3,982.15
MA01Z	£5,467.73
MA02B	£4,209.72

MA02C	£3,676.11
MA03C	£3,107.58
MA03D	£2,532.15
MA04C	£2,501.14
MA04D	£2,087.46
MA06A	£4,871.05
MA06B	£3,783.22
MA06C	£3,362.98
MA07E	£5,336.99
MA07F	£3,944.64
MA07G	£3,255.48
MA08A	£3,209.11
MA08B	£2,888.08
MA09Z	£1,542.47
MA10Z	£1,180.92
MA11Z	£2,840.05
MA12Z	£1,112.56
MA17C	£1,150.77
MA17D	£1,449.77
MA18C	£729.37
MA18D	£991.08
MA19A	£724.06
MA19B	£735.02
MA20Z	£1,227.49
MA22Z	£1,375.81
MA23Z	£910.72
MA24Z	£1,009.95
MA25Z	£817.73
MA26A	£6,851.03
MA26B	£5,026.02
MA26C	£4,594.76
MA27Z	£1,030.43
MA28Z	£3,668.44
MA29Z	£1,544.79
MA30Z	£1,350.66
MA31Z	£775.03
MA32Z	£846.25
MA33Z	£885.70
MA34Z	£1,166.77
MA35Z	£631.48
MA36Z	£433.61
MA38Z	£503.08
MA39Z	£395.81
MA40Z	£699.03
MB05C	£6,662.48

MB05D	£5,287.21
MB05E	£3,537.51
MB05F	£2,303.05
MB05G	£5,387.16
MB05H	£3,710.38
MB05J	£3,141.07
MB05K	£1,569.16
MB05L	£1,557.71
MB08A	£1,732.75
MB08B	£466.09
MB09B	£2,566.40
MB09C	£2,428.72
MB09D	£2,206.44
MB09E	£542.97
MB09F	£514.50
MC09Z	£502.28
MC11Z	£903.32
MC12Z	£1,079.44
NZ10Z	£741.28
NZ16Z	£514.84
NZ17A	£1,742.01
NZ17B	£0.00
NZ18A	£2,327.73
NZ18B	£643.79
NZ19A	£632.65
NZ19B	£520.77
NZ20A	£569.62
NZ20B	£513.72
NZ21Z	£0.00
NZ22Z	£231.50
NZ23Z	£649.69
NZ24B	£2,146.26
NZ25Z	£1,766.53
NZ26A	£670.03
NZ26B	£2,065.46
NZ27Z	£2,284.30
NZ30A	£2,262.55
NZ30B	£1,147.73
NZ30C	£1,092.15
NZ31A	£2,685.65
NZ31B	£2,425.97
NZ31C	£2,208.06
NZ32A	£3,075.14
NZ32B	£2,640.80
NZ32C	£0.00

NZ33A	£2,983.78
NZ33B	£2,735.70
NZ33C	£2,512.40
NZ34B	£2,881.51
NZ34C	£2,825.40
NZ40A	£1,360.86
NZ40B	£2,488.36
NZ40C	£2,253.11
NZ41A	£3,165.62
NZ41B	£1,538.37
NZ41C	£2,532.36
NZ42A	£3,536.05
NZ42B	£3,001.46
NZ42C	£2,719.67
NZ43B	£3,130.63
NZ43C	£2,929.01
NZ44A	£3,855.94
NZ44B	£1,883.85
NZ44C	£3,175.10
NZ50A	£4,044.71
NZ50B	£3,127.84
NZ50C	£1,939.33
NZ51A	£5,164.17
NZ51B	£4,126.61
NZ51C	£3,441.76
PA01A	£3,913.13
PA01B	£830.64
PA02A	£608.50
PA03B	£514.21
PA04A	£572.08
PA04B	£490.55
PA07B	£1,523.56
PA08A	£2,350.40
PA08B	£692.65
PA11Z	£467.62
PA12Z	£1,410.11
PA14C	£3,250.84
PA14D	£679.77
PA14E	£490.45
PA16B	£1,803.64
PA17B	£1,724.24
PA19A	£535.54
PA21B	£1,381.30
PA22Z	£1,479.29
PA23A	£3,399.55

PA23B	£2,303.84
PA24Z	£1,899.46
PA25A	£4,433.02
PA26A	£3,008.65
PA26B	£1,542.16
PA27Z	£2,968.28
PA28A	£2,693.99
PA28B	£488.44
PA29Z	£505.45
PA30B	£651.62
PA31Z	£4,543.05
PA32B	£576.32
PA34A	£2,680.24
PA34B	£532.44
PA35B	£1,857.51
PA36Z	£2,269.61
PA48B	£2,176.65
PA50Z	£480.04
PA52C	£12,554.75
PA56B	£1,487.55
PA57Z	£1,818.39
PA58Z	£511.94
PA59E	£3,319.78
PA59F	£1,797.45
PA62Z	£457.81
PA63B	£636.20
PA63C	£1,469.76
PA65A	£458.62
PA67Z	£1,642.07
PA68Z	£2,000.68
PA69Z	£1,873.06
PA70Z	£477.02
QZ01C	£13,766.98
QZ01D	£11,208.28
QZ01E	£8,378.49
QZ01F	£7,077.00
QZ02C	£13,767.89
QZ02D	£9,768.56
QZ02E	£6,446.11
QZ02F	£5,459.81
QZ03B	£10,563.15
QZ05C	£1,898.17
QZ05D	£1,009.31
QZ05E	£1,008.63
QZ05F	£1,047.03

QZ11C	£15,879.14
QZ11D	£12,287.67
QZ11E	£10,158.69
QZ11F	£8,750.96
QZ12A	£9,783.80
QZ12B	£6,657.74
QZ12C	£5,260.20
QZ12D	£4,373.55
QZ12E	£1,098.05
QZ13Z	£1,805.34
QZ14Z	£474.97
QZ15D	£8,857.14
QZ15E	£9,724.57
QZ15F	£4,155.53
QZ15G	£2,494.01
QZ15H	£3,368.50
QZ15J	£2,291.41
QZ16D	£1,312.97
QZ16E	£864.87
QZ16F	£3,951.22
QZ16G	£3,331.18
QZ16H	£3,224.26
QZ17D	£5,790.42
QZ17E	£4,782.02
QZ17F	£693.37
QZ17G	£671.77
QZ17H	£2,194.59
QZ17J	£512.96
QZ19Z	£1,832.80
QZ20B	£494.16
QZ20C	£2,516.87
QZ20D	£1,587.00
QZ20E	£1,201.02
QZ21A	£1,534.74
QZ21B	£1,528.98
QZ22A	£1,230.38
QZ22B	£1,074.02
QZ24A	£5,212.58
QZ24B	£4,172.97
QZ24C	£3,943.14
QZ25A	£5,607.22
QZ25B	£3,814.50
RC02Z	£1,807.21
RC12A	£8,332.30
RC12C	£10,406.44

RC12D	£10,515.15
RC12E	£12,466.92
RC13C	£18,285.51
RC14Z	£2,650.85
RC15Z	£3,250.40
RC16Z	£5,947.00
RC31Z	£3,080.66
RC32Z	£3,359.62
RC33Z	£4,940.19
RC41Z	£1,957.52
RC51Z	£8,339.11
SA01G	£3,209.85
SA01H	£621.99
SA02G	£3,698.15
SA02H	£817.28
SA02J	£3,068.06
SA03G	£2,722.24
SA04G	£426.96
SA04H	£584.04
SA04J	£526.03
SA04K	£308.79
SA04L	£360.21
SA05H	£1,751.69
SA05J	£364.28
SA06G	£932.47
SA06H	£323.49
SA06J	£636.20
SA06K	£914.14
SA07G	£285.16
SA07H	£3,223.75
SA07J	£314.78
SA08G	£554.24
SA08H	£2,050.03
SA08J	£502.54
SA09G	£3,267.18
SA09H	£2,310.08
SA09J	£556.94
SA09K	£1,493.30
SA09L	£1,293.93
SA12G	£3,574.36
SA12H	£2,586.97
SA12J	£372.45
SA12K	£707.78
SA13A	£482.51
SA13B	£705.55

SA14Z	£9,908.42
SA17G	£4,081.88
SA17H	£288.20
SA18Z	£727.73
SA19A	£9,817.12
SA21A	£68,952.39
SA24J	£4,535.27
SA25G	£12,199.39
SA25H	£512.39
SA25J	£11,638.22
SA25K	£8,970.10
SA25L	£5,147.49
SA25M	£391.34
SA26A	£16,115.69
SA30A	£8,376.93
SA30B	£4,480.35
SA30C	£3,983.43
SA30D	£3,241.63
SA30E	£362.36
SA31A	£10,209.91
SA31B	£6,511.20
SA31C	£4,395.19
SA31D	£411.14
SA31E	£3,279.83
SA31F	£389.52
SA32C	£337.90
SA32D	£384.63
SA33Z	£530.82
SA34Z	£3,816.68
SA35B	£3,345.86
SA35C	£2,548.07
SA35D	£549.89
SA35E	£1,775.76
SA36A	£3,799.11
SA36B	£2,409.34
SA36C	£468.24
SA37Z	£390.80
SB97Z	£0.00
SC97Z	£0.00
UZ01Z	£0.00
VA10A	£569.25
VA10B	£2,655.92
VA10C	£3,280.54
VA10D	£5,207.60
VA11A	£857.58

VA11B	£3,622.68
VA11C	£1,163.69
VA11D	£8,685.13
VA12A	£4,935.13
VA12B	£1,778.03
VA12C	£7,170.38
VA12D	£9,786.02
VA13A	£5,525.23
VA13B	£5,696.81
VA13C	£8,641.99
VA13D	£12,174.40
VA14A	£7,821.35
VA14D	£7,835.66
VA15C	£15,836.28
WA01W	£5,006.52
WA01Y	£3,209.65
WA02Z	£406.25
WA03A	£4,572.79
WA03B	£3,147.09
WA03C	£2,223.86
WA04Z	£1,214.85
WA05Z	£3,334.39
WA06A	£6,054.21
WA06B	£450.56
WA06C	£404.27
WA07Z	£520.48
WA08Z	£538.90
WA09A	£4,100.05
WA09B	£2,587.80
WA09C	£1,968.41
WA10Z	£2,088.53
WA11A	£2,223.02
WA11B	£412.34
WA11C	£390.24
WA12A	£6,114.94
WA12B	£3,756.52
WA12C	£2,821.56
WA12D	£2,046.96
WA14A	£374.61
WA14B	£673.71
WA15A	£7,799.86
WA15B	£4,036.00
WA15V	£1,059.85
WA16W	£1,364.77
WA16Y	£370.14

WA17A	£3,987.07
WA17C	£1,580.32
WA17D	£1,368.60
WA18A	£4,264.16
WA18B	£2,467.62
WA18C	£451.85
WA18D	£473.55
WA18E	£1,661.02
WA18F	£427.71
WA19Z	£1,356.43
WA20Z	£409.28
WA21Z	£286.31
WA22A	£3,165.03
WA22B	£506.13
WA22C	£1,929.65
WA23A	£4,292.64
WA23B	£1,826.64
WA23C	£1,871.27
WA24A	£1,281.84
WA24B	£1,005.80
WD11Z	£480.61
WD22Z	£379.98
WF01A	£0.00
WF02A	£0.00

Source: NHS Digital. HRG4+ 2012/13 Reference Costs Grouper and Documentation. Available online: http://content.digital.nhs.uk/article/4698/HRG4-201213-Reference-Costs-Grouper-and-Documentation.

Table E. Unit costs of pain medications

Product code[1]	Unit cost
4	0.877
7	0.058
11	0.041
15	0.048
19	0.058
40	0.057
49	0.036
53	0.044
57	0.058
83	0.032
86	0.046
96	0.051
112	0.061
120	0.061
123	0.862
124	0.877
126	0.023
129	0.098
139	0.058
140	0.098
141	0.121
156	0.603
157	0.311
158	0.051
162	0.057
177	0.061
182	0.035
187	0.046
191	0.107
213	0.057
234	0.962
249	0.458
258	0.058
259	0.023
262	0.877
296	0.064
306	0.057
320	0.492
328	1.044
332	0.061
341	0.121
354	10.546

360	0.936
382	0.038
387	0.267
389	0.135
392	0.057
396	0.101
402	0.057
407	0.098
416	0.057
417	0.057
423	0.458
447	0.207
458	0.166
462	2.37
474	0.359
487	0.036
495	0.046
497	0.076
499	0.057
526	0.161
539	0.128
551	5.06
580	0.207
586	0.057
589	0.057
595	0.036
597	0.057
607	0.262
612	0.076
617	0.493
620	3.598
625	0.058
628	0.076
635	2.37
647	0.936
649	0.076
650	0.718
655	0.633
656	0.058
659	0.192
660	0.042
661	0.045
676	0.829
685	45.472
687	0.155

701	0.046
715	15
736	0.05
748	3.598
754	0.035
757	6.731
759	0.029
767	0.058
784	0.166
790	1.15
800	0.051
807	0.098
810	0.051
819	1.15
826	0.71
827	0.603
838	0.813
849	0.048
850	0.035
855	0.029
899	0.877
901	0.029
913	0.057
917	0.057
919	1.761
920	1.761
928	0.076
1030	0.016
1043	0.118
1051	0.076
1068	0.877
1073	0.064
1075	0.057
1086	0.098
1096	0.076
1115	0.311
1116	0.311
1139	0.076
1147	0.029
1156	0.061
1208	0.036
1210	0.076
1231	0.433
1233	0.207
1246	0.023

1261	0.051
1270	0.061
1392	0.138
1404	0.877
1446	0.057
1468	0.057
1469	0.045
1470	0.045
1496	0.076
1503	0.633
1544	0.052
1571	0.433
1584	0.072
1609	0.058
1621	0.057
1640	0.058
1688	0.05
1689	0.029
1692	0.057
1708	0.166
1739	0.048
1755	0.307
1766	0.207
1778	0.267
1808	70.239
1862	0.058
1866	0.098
1888	0.037
1983	0.023
1984	0.311
1999	1.38
2034	1.38
2040	0.058
2041	0.093
2047	0.057
2055	0.877
2129	0.138
2197	0.115
2200	0.061
2211	0.058
2234	0.153
2235	0.153
2243	0.035
2257	0.267
2288	0.045

2293	0.829
2344	0.029
2366	0.195
2367	0.68
2382	0.267
2386	0.311
2387	0.207
2450	0.962
2462	0.877
2463	0.121
2486	0.036
2525	0.035
2555	0.041
2586	0.029
2606	0.036
2622	0.138
2671	0.05
2693	0.061
2794	0.051
2800	0.058
2827	0.121
2846	0.057
2858	0.052
2863	0.267
2904	0.207
2917	0.057
2936	0.596
2938	0.016
2952	0.013
2957	0.192
2966	0.458
2985	0.037
2986	0.057
2997	0.046
3043	0.813
3053	0.098
3064	0.22
3074	0.029
3077	0.036
3156	0.058
3165	2.808
3168	0.688
3170	0.045
3182	0.103
3183	0.596

3185	0.057
3216	0.061
3239	0.197
3266	0.103
3311	0.326
3313	0.028
3316	0.029
3326	0.433
3378	0.046
3409	0.307
3416	0.311
3421	0.207
3431	0.045
3432	0.115
3435	0.058
3490	0.032
3496	0.045
3522	0.101
3597	0.057
3599	0.098
3644	0.29
3653	1.219
3698	0.115
3710	0.307
3713	0.058
3724	0.058
3777	0.032
3794	0.118
3817	0.118
3852	0.311
3897	0.532
3901	0.098
3903	0.95
3919	0.046
3935	0.307
3958	0.076
3972	0.045
3974	0.577
4016	0.118
4043	9.402
4045	0.115
4095	0.158
4114	0.29
4115	0.29
4118	0.596

4186	0.028
4196	2.107
4216	0.098
4266	0.046
4280	0.055
4298	0.057
4309	0.057
4320	0.453
4368	0.326
4369	0.057
4469	0.095
4476	0.371
4477	0.371
4506	0.207
4556	0.058
4564	0.095
4565	0.095
4600	0.877
4607	0.877
4625	0.207
4631	0.057
4633	0.877
4648	0.061
4671	0.051
4682	0.037
4690	0.032
4691	11.573
4692	0.057
4693	0.633
4710	0.023
4713	0.829
4731	0.016
4762	0.061
4781	0.05
4805	0.038
4806	0.311
4823	0.115
4834	0.406
4880	0.207
4911	0.048
4950	0.044
4965	0.307
4999	0.406
5025	70.239
5028	0.541

5048	6.731
5079	7.562
5080	0.718
5085	0.057
5137	0.315
5138	0.158
5169	0.541
5173	0.184
5175	0.359
5200	0.057
5221	0.104
5239	1.343
5243	0.058
5254	0.718
5257	0.406
5266	0.517
5268	0.098
5323	0.028
5339	0.059
5401	0.076
5407	0.453
5455	0.517
5482	0.684
5487	0.633
5535	0.633
5555	0.633
5563	0.262
5575	0.633
5585	0.461
5599	0.461
5648	0.057
5651	7.04
5652	0.5
5657	9.402
5664	0.166
5665	0.633
5668	7.562
5670	7.562
5681	0.046
5696	6.348
5697	6.609
5714	0.166
5767	0.061
5812	0.82
5833	4.409

5840	0.633
5843	0.461
5896	0.061
5936	3.95
5938	0.861
5955	0.058
5991	0.586
6002	0.046
6035	0.052
6040	5.928
6056	0.886
6115	0.603
6153	0.406
6181	7.9
6208	0.603
6210	0.886
6215	0.541
6225	0.59
6226	45.472
6231	70.239
6232	0.262
6234	0.196
6249	0.195
6269	0.262
6298	9.402
6304	0.072
6312	0.035
6366	0.5
6414	3.025
6435	0.603
6458	7.562
6459	7.562
6464	0.718
6498	0.82
6547	0.378
6557	0.229
6558	0.155
6571	2.107
6584	1.15
6608	0.945
6609	1.928
6631	1.15
6699	1.195
6708	1.93
6736	0.262

6769	0.229
6790	0.229
6853	0.061
6879	3.95
6881	0.603
6886	0.051
6892	0.939
6917	5.928
6936	1.15
6948	3.578
6949	1.15
6999	1.138
7005	1.15
7058	0.016
7063	0.877
7072	0.038
7082	3.598
7104	0.058
7107	6.731
7114	4.315
7126	2.518
7141	0.061
7167	0.229
7197	0.192
7205	0.058
7208	1.138
7209	1.15
7236	7.888
7238	14.365
7261	0.061
7275	0.945
7334	4.4
7372	0.945
7389	0.945
7394	1.15
7397	9.402
7406	0.461
7428	0.059
7432	0.381
7434	0.532
7450	0.862
7457	0.492
7469	0.107
7488	0.118
7489	0.029

7490	0.195
7499	0.057
7517	0.166
7518	0.057
7520	0.877
7524	0.307
7534	0.057
7535	0.057
7538	0.34
7542	0.057
7555	4.4
7667	0.158
7677	0.596
7678	0.95
7692	70.239
7729	0.633
7751	0.036
7780	0.596
7840	0.488
7849	8.543
7875	0.192
7913	0.267
7999	2.297
8017	0.22
8039	1.276
8040	3.028
8062	0.207
8075	0.964
8139	0.877
8233	0.057
8246	0.057
8329	0.057
8332	0.037
8335	0.058
8375	0.68
8385	0.488
8401	0.048
8416	0.541
8447	0.197
8451	0.326
8456	0.093
8493	0.773
8510	0.061
8600	0.307
8640	0.95

8663	0.098
8672	0.307
8726	0.032
8735	4.315
8740	0.192
8789	0.311
8822	0.371
8831	0.035
8866	0.235
8876	0.262
8878	0.032
8882	0.052
8969	0.136
9001	2.595
9012	4.409
9044	0.057
9053	37.365
9129	0.057
9137	0.262
9163	0.107
9183	0.586
9201	0.061
9209	0.155
9222	0.207
9231	0.029
9239	0.029
9271	1.38
9275	0.196
9313	0.155
9325	0.513
9329	0.877
9330	0.315
9331	0.513
9332	0.375
9337	0.192
9342	0.371
9371	1.041
9381	0.787
9389	0.046
9396	0.29
9421	0.036
9432	0.057
9439	9.402
9457	0.057
9460	0.057

9462	0.057
9465	0.311
9474	0.161
9476	0.058
9484	0.371
9500	0.207
9516	0.058
9557	0.166
9562	0.044
9602	0.055
9615	0.158
9630	0.052
9637	0.184
9672	0.586
9688	0.207
9712	0.028
9728	0.013
9736	0.262
9739	0.29
9742	0.057
9785	0.058
9822	0.861
9855	0.058
9874	1.928
9886	0.057
9914	0.028
9917	0.058
9927	1.93
9928	3.025
9945	0.235
9960	0.371
9966	0.59
9973	0.461
10007	0.042
10021	3.578
10023	0.107
10033	0.136
10077	0.378
10122	0.041
10149	0.057
10169	0.307
10176	0.058
10178	0.058
10189	1.15
10196	0.058

10205	7.888
10209	0.057
10226	0.058
10239	1.301
10265	0.061
10295	0.153
10309	1.219
10325	0.158
10336	0.381
10509	0.862
10558	0.076
10582	0.057
10583	0.862
10589	0.095
10602	0.058
10625	0.688
10631	0.046
10678	0.095
10701	0.057
10730	0.046
10748	0.058
10769	1.044
10785	0.166
10792	0.057
10866	1.361
10917	0.311
10922	11.573
10925	1.92
10978	0.076
10993	0.029
11009	0.057
11101	0.046
11129	45.472
11168	0.311
11215	0.076
11250	0.058
11275	0.865
11322	0.207
11325	0.057
11342	0.633
11405	0.461
11461	0.166
11466	0.153
11471	0.865
11495	0.307

11522	0.603
11540	0.603
11549	0.473
11550	0.057
11554	0.057
11559	0.046
11584	7.9
11614	0.058
11665	0.058
11698	0.192
11722	0.08
11734	0.046
11746	0.792
11748	1.08
11755	0.262
11801	1.92
11807	0.057
11837	0.59
11838	1.276
11843	6.506
11907	0.166
11942	0.118
11961	0.057
11963	0.035
11970	0.035
11971	0.633
11980	0.048
11982	2.518
11986	0.029
11995	0.433
11999	0.433
12000	0.433
12020	2.595
12075	0.577
12122	0.135
12171	0.057
12219	4.409
12353	0.95
12394	0.877
12447	0.877
12549	0.596
12591	0.371
12602	0.046
12604	0.586
12709	0.057

12776	0.061
12889	0.262
12900	0.192
12992	0.057
13031	0.22
13076	6.506
13083	0.061
13114	0.046
13117	0.192
13172	4.409
13225	4.409
13280	4.409
13300	14.365
13347	0.135
13380	0.684
13420	4.315
13459	0.064
13606	0.061
13627	0.045
13639	0.05
13711	0.262
13807	0.061
13813	0.046
13818	0.153
13893	0.057
13995	1.276
13997	0.586
14050	0.586
14063	0.586
14084	0.207
14085	0.311
14086	1.12
14156	0.633
14226	0.192
14333	0.048
14378	0.058
14385	0.057
14476	0.076
14490	0.046
14534	0.035
14541	0.262
14551	0.877
14570	0.061
14578	0.773
14602	0.128

14627	0.877
14672	0.207
14676	0.057
14678	0.311
14688	0.107
14707	0.311
14776	0.267
14785	0.057
14829	0.058
14884	0.603
14899	0.028
14900	11.573
14901	0.603
14912	0.057
14935	4.409
14964	0.058
15005	0.061
15023	0.115
15068	0.048
15104	0.098
15159	1.275
15180	0.098
15198	0.041
15201	0.057
15238	0.058
15286	0.813
15337	7.015
15339	0.235
15353	45.472
15361	6.915
15367	0.877
15501	0.195
15732	0.057
15767	0.061
15779	0.057
15781	0.787
15792	0.375
15793	4.315
15798	1.001
15815	0.5
15831	0.051
15845	0.058
15871	1.343
15930	0.061
15950	1.276

15964	0.371
16001	0.057
16039	0.057
16076	0.473
16096	0.057
16106	0.058
16112	0.877
16189	4.409
16192	0.057
16193	0.138
16194	0.326
16215	0.05
16221	0.076
16222	0.057
16225	0.311
16271	0.792
16272	0.311
16273	0.192
16286	0.207
16335	4.409
16395	0.541
16467	0.051
16473	0.153
16474	0.153
16509	1.15
16542	1.15
16592	0.057
16618	9.402
16818	0.057
17029	0.207
17030	0.207
17043	0.71
17068	0.061
17073	6.915
17124	0.311
17126	0.207
17128	0.057
17158	0.058
17165	0.098
17183	0.596
17201	0.098
17386	0.962
17398	4.409
17412	0.058
17491	0.207

17525	0.311
17532	0.311
17563	0.058
17564	0.104
17572	0.577
17671	1.128
17680	0.076
17733	0.098
17750	0.061
17754	0.095
17818	0.433
17863	1.044
17893	0.371
17896	1.128
17917	0.107
17926	0.057
17936	1.276
17943	0.262
17998	0.058
18151	0.603
18166	1.276
18174	7.04
18196	0.016
18211	0.386
18221	0.038
18234	0.076
18342	0.036
18364	0.048
18371	0.311
18441	1.195
18448	0.158
18491	0.458
18527	0.048
18560	42.859
18566	4.409
18647	0.813
18656	0.046
18662	0.076
18700	0.192
18734	0.586
18792	0.235
18798	0.057
18799	1.343
18800	0.59
18801	0.586

18812	0.057
18820	0.016
18881	0.046
18921	0.076
18922	0.058
19007	0.098
19036	0.057
19046	0.048
19092	0.5
19116	0.458
19139	0.058
19146	8.77
19206	0.058
19291	0.262
19317	0.057
19320	0.307
19382	0.207
19398	0.061
19449	0.192
19471	0.371
19477	0.586
19575	0.057
19764	0.057
19779	0.035
19954	1.902
19972	1.902
19993	0.29
20005	4.409
20026	0.036
20036	1.275
20059	0.267
20068	0.028
20105	0.076
20116	0.058
20127	0.057
20310	0.046
20384	0.311
20385	0.098
20386	0.326
20395	0.207
20403	0.877
20442	0.061
20565	0.057
20571	0.773
20621	0.207

20650	0.877
20783	0.192
20805	0.207
20815	0.262
20967	0.061
20978	0.057
21045	0.048
21050	0.433
21081	0.035
21113	0.044
21123	0.307
21229	0.877
21251	0.058
21256	0.046
21275	1.001
21285	2.854
21387	0.057
21397	1.08
21419	0.158
21421	0.166
21444	0.076
21562	0.013
21610	0.311
21673	0.057
21703	0.057
21745	0.052
21777	0.541
21797	0.541
21807	0.076
21811	0.057
21813	0.048
21815	0.098
21816	0.098
21821	0.098
21824	0.057
21831	0.023
21840	0.045
21843	0.115
21846	0.307
21864	0.121
21880	0.051
21947	0.406
21952	8.77
21955	0.813
22014	0.029

22024	0.046
22026	0.192
22066	6.731
22070	0.032
22206	0.166
22230	0.023
22288	0.028
22305	0.877
22380	1.236
22571	0.939
22690	1.041
22756	0.192
22764	0.058
23026	0.076
23060	1.276
23077	0.029
23114	0.029
23121	0.098
23158	0.16
23204	0.076
23323	0.098
23420	0.128
23425	0.057
23442	0.71
23617	0.877
23625	0.406
23716	0.058
23795	1.761
23840	0.058
23952	0.058
23981	0.406
24000	0.058
24007	0.098
24020	0.045
24075	0.058
24086	0.061
24108	7.562
24121	0.076
24122	0.057
24125	0.057
24128	0.076
24133	0.058
24134	0.036
24137	0.061
24141	0.032

24145	0.036
24147	0.036
24152	0.032
24193	0.061
24212	0.05
24236	0.311
24305	0.048
24308	0.076
24320	0.05
24343	0.08
24356	0.136
24361	0.16
24383	0.29
24440	0.013
24453	0.586
24469	0.936
24531	0.577
24534	0.058
24584	1.128
24617	0.036
24640	8.543
24680	0.032
24682	0.577
24736	2.854
24828	0.057
24830	4.436
24867	0.458
24887	0.057
24947	0.058
24986	7.014
25109	0.058
25185	0.493
25199	6.348
25205	0.936
25257	0.057
25283	0.057
25329	0.076
25330	0.057
25341	0.045
25342	0.098
25358	0.057
25361	0.076
25362	0.076
25481	10.546
25514	0.057

25529	0.057
25619	0.048
25643	0.267
25701	0.813
25750	0.045
25790	0.076
25794	0.048
25800	0.936
25815	0.357
25833	1.044
25895	0.058
26021	7.014
26083	1.761
26095	0.048
26115	45.472
26133	0.058
26159	0.061
26165	0.057
26213	0.032
26216	0.098
26231	0.098
26234	0.121
26242	0.045
26247	0.064
26277	0.013
26283	0.046
26284	0.586
26291	0.877
26336	0.792
26351	0.207
26522	0.064
26575	0.161
26631	0.311
26746	0.058
26888	0.311
26908	6.609
26967	0.877
26970	0.936
26986	0.541
26988	0.058
27008	0.037
27013	0.813
27055	0.057
27058	0.371
27064	0.877

27082	0.433
27197	0.877
27200	0.311
27362	0.311
27366	0.098
27441	0.633
27446	0.877
27452	0.058
27454	0.072
27459	0.058
27484	0.16
27490	0.16
27591	0.406
27677	0.829
27749	1.301
27778	0.036
27782	0.048
27783	0.048
27784	0.058
27785	0.051
27856	0.877
27968	0.048
28168	0.057
28172	0.166
28189	11.573
28211	0.028
28255	0.045
28256	0.057
28328	0.013
28332	0.577
28344	0.058
28346	0.058
28348	0.057
28390	0.076
28421	0.633
28479	0.166
28553	0.057
28598	0.107
28636	0.877
28695	0.121
28711	4.315
28712	0.029
28713	0.34
28728	0.792
28764	0.311

28780	0.041
28784	0.057
28816	0.098
28878	0.877
28888	0.057
28900	0.061
28955	0.058
29014	2.808
29020	1.276
29037	0.311
29068	0.048
29181	0.207
29232	0.061
29304	1.128
29316	0.048
29324	0.473
29330	0.057
29332	0.936
29342	0.058
29345	0.936
29352	0.936
29373	0.057
29426	0.71
29455	0.311
29465	0.307
29480	6.915
29488	0.058
29500	4.315
29524	0.098
29577	7.015
29587	0.048
29704	0.057
29749	0.057
29772	0.813
29860	0.046
29898	0.633
29951	1.343
30021	0.057
30049	15
30070	0.058
30123	0.058
30164	0.166
30165	0.107
30168	0.045
30243	0.057

30252	0.633
30282	0.207
30295	0.107
30297	0.057
30327	0.813
30382	0.057
30389	0.023
30391	0.064
30444	0.041
30514	3.028
30531	0.013
30556	0.058
30698	7.562
30724	0.936
30761	0.235
30790	0.207
30806	0.057
30811	0.166
30849	0.207
30892	0.936
30923	0.311
30942	0.057
30954	0.877
30966	0.877
30982	0.098
30984	0.877
30994	0.877
31033	4.315
31053	3.598
31054	0.061
31064	0.577
31105	0.541
31107	0.406
31151	0.058
31155	0.058
31178	0.036
31196	0.058
31253	0.71
31257	0.058
31383	0.207
31429	0.045
31452	0.051
31469	0.098
31482	0.057
31540	5.06

31577	0.051
31582	0.862
31584	0.862
31589	0.207
31650	4.409
31700	0.038
31734	1.08
31777	0.307
31787	0.207
31871	0.057
31885	0.71
31894	0.057
31916	0.433
31935	0.962
31943	0.051
31944	0.076
31945	0.098
31950	0.057
31959	0.05
31960	4.315
31962	0.813
32090	0.064
32093	0.877
32097	0.076
32100	0.098
32105	0.064
32108	0.076
32136	0.057
32163	0.058
32165	0.046
32227	0.813
32234	0.064
32237	0.013
32242	0.048
32365	0.048
32366	0.057
32425	3.025
32436	0.057
32439	0.036
32450	1.08
32509	0.057
32519	0.877
32520	0.046
32536	0.076
32554	0.877

32601	0.311
32626	0.877
32641	0.061
32688	7.562
32692	0.058
32766	1.236
32831	0.71
32839	0.058
32854	0.207
32862	0.936
32875	0.048
32891	0.877
32897	7.562
32916	0.207
32926	0.041
32970	0.058
32993	2.107
33060	0.058
33068	1.128
33090	0.032
33104	0.058
33111	0.045
33113	0.05
33133	4.409
33180	0.813
33260	0.057
33318	0.05
33321	0.05
33340	0.877
33357	0.057
33386	0.877
33457	0.057
33475	1.7
33559	0.057
33568	0.813
33589	0.048
33614	0.058
33624	0.037
33643	0.058
33645	0.207
33647	0.877
33653	0.058
33654	0.044
33666	0.058
33669	0.057

33679	0.058
33687	0.877
33688	0.051
33704	0.936
33710	0.058
33743	0.107
33781	4.409
33785	0.057
33801	0.023
33826	0.058
33832	0.013
33838	0.877
33935	0.048
33961	0.051
33994	0.076
33995	0.877
34008	0.044
34022	0.877
34065	0.406
34073	0.633
34090	0.057
34091	0.076
34107	0.037
34129	0.036
34143	0.453
34152	0.057
34164	0.058
34172	0.057
34176	0.057
34182	0.037
34190	0.076
34197	0.036
34199	1.761
34209	0.058
34212	0.207
34218	0.076
34224	0.035
34229	0.058
34235	0.029
34251	0.032
34257	0.058
34260	0.29
34264	0.051
34266	0.029
34271	0.311

34274	0.037
34281	0.541
34289	0.045
34290	0.045
34305	0.058
34319	0.877
34348	0.038
34349	0.877
34350	0.058
34354	0.057
34359	0.048
34362	0.076
34373	0.057
34383	0.051
34396	0.058
34397	0.877
34401	0.032
34409	0.058
34422	0.046
34425	0.048
34437	0.057
34438	0.023
34440	0.044
34444	0.038
34447	0.057
34468	0.877
34474	0.036
34477	0.633
34487	0.057
34489	7.562
34495	0.058
34497	0.058
34500	0.058
34503	0.036
34506	0.042
34518	0.058
34521	0.046
34527	0.057
34536	0.048
34546	0.877
34550	0.048
34552	0.051
34554	0.877
34570	0.046
34579	0.044

34595	0.064
34597	0.877
34606	0.042
34610	0.098
34616	0.052
34621	0.057
34634	0.037
34639	0.046
34662	0.044
34663	0.936
34667	0.051
34669	0.058
34670	0.045
34678	0.877
34700	0.877
34716	0.072
34718	0.029
34725	0.103
34729	0.048
34730	0.044
34731	0.032
34737	0.041
34738	0.045
34743	0.098
34744	0.311
34757	0.048
34761	0.877
34769	0.098
34771	4.409
34782	0.036
34784	0.058
34786	7.562
34787	7.562
34789	0.051
34793	0.023
34808	0.046
34815	0.058
34840	0.051
34845	0.051
34850	0.098
34858	0.058
34861	0.029
34865	0.058
34889	0.048
34898	0.023

34910	0.064
34911	0.057
34916	0.032
34920	0.041
34922	0.098
34923	0.045
34924	0.023
34931	0.057
34939	0.041
34946	0.104
34954	0.058
34961	0.098
34968	0.058
34977	0.098
34980	0.057
35038	3.025
35085	3.025
35093	4.409
35169	0.886
35170	0.378
35255	4.409
35265	0.016
35269	0.492
35292	0.057
35330	0.493
35341	3.025
35347	0.29
35438	0.29
35506	1.128
35562	6.291
35651	0.541
35653	0.517
35656	0.29
35679	0.058
35681	0.378
35682	0.886
35711	0.076
35749	0.061
35792	0.057
35800	0.877
35806	0.29
35853	0.493
35890	0.057
35893	0.311
35935	0.035

35939	4.409
35965	0.058
35967	0.877
35968	3.598
36019	0.041
36035	0.792
36038	4.409
36040	11.573
36152	0.877
36211	6.731
36260	0.023
36329	0.061
36436	1.128
36472	0.862
36486	0.311
36488	0.051
36577	0.05
36597	0.057
36606	0.048
36608	0.051
36650	0.057
36697	0.541
36732	0.046
36754	0.058
36787	0.048
36873	0.046
36929	0.877
36945	0.877
36949	0.046
36993	0.051
36994	0.057
37002	0.057
37020	0.406
37021	0.541
37053	0.057
37094	0.057
37253	0.048
37291	0.041
37411	0.877
37507	1.128
37518	1.128
37553	0.048
37562	0.5
37587	0.5
37648	0.048

37688	0.603
37703	0.71
37719	11.573
37731	0.057
37750	0.307
37763	0.945
37779	3.598
37801	1.15
37816	0.057
37831	0.29
37850	0.061
37867	0.29
37904	0.058
37923	6.731
37928	2.518
37954	2.518
37960	6.731
37968	6.152
37972	0.061
37979	0.118
38013	0.962
38031	3.598
38032	0.058
38085	0.057
38088	0.057
38092	0.862
38103	0.962
38183	0.493
38196	0.541
38199	4.409
38293	1.15
38311	0.378
38323	0.877
38326	9.402
38332	0.057
38351	9.402
38363	0.057
38365	9.402
38430	0.041
38493	0.057
38511	0.045
38521	0.044
38527	0.061
38528	0.046
38553	11.573

38770	0.517
38817	0.158
38827	0.032
38874	0.865
38881	0.207
38943	0.877
38944	9.402
38948	0.311
38950	0.058
38956	0.541
38970	0.115
38976	15.077
38984	0.058
38992	0.207
39019	0.138
39084	11.573
39085	0.045
39104	6.915
39109	0.307
39145	0.596
39180	6.731
39215	0.86
39240	1.51
39251	3.598
39264	0.311
39317	0.098
39333	0.058
39340	0.058
39354	0.016
39362	15.077
39363	1.51
39437	0.013
39461	0.057
39469	9.085
39475	0.229
39477	0.229
39478	0.945
39481	0.058
39498	0.945
39502	0.057
39505	0.29
39518	9.085
39558	0.044
39590	6.506
39629	0.877

39647	0.877
39656	0.877
39693	1.291
39708	0.603
39709	0.541
39722	0.158
39723	9.085
39746	9.085
39750	0.406
39756	6.506
39758	0.057
39798	0.29
39799	6.609
39811	0.541
39823	0.057
39842	0.197
39873	0.048
39876	0.603
39929	6.506
39934	0.058
39940	0.058
39987	7.04
40018	6.506
40058	0.29
40060	0.541
40061	0.406
40083	0.057
40086	0.057
40098	7.04
40107	0.058
40128	7.04
40141	0.433
40158	0.058
40159	0.107
40166	0.046
40185	0.813
40211	0.378
40212	0.886
40215	0.433
40239	0.962
40249	0.29
40253	0.098
40254	0.046
40336	0.135
40385	0.058

40394	0.048
40396	0.037
40401	0.045
40422	0.041
40434	6.348
40473	0.492
40484	0.433
40508	6.348
40516	0.057
40563	0.192
40576	7.04
40616	1.928
40645	1.928
40662	0.058
40663	0.051
40664	0.488
40688	3.025
40718	0.046
40752	3.025
40756	0.076
40785	1.93
40805	0.406
40883	0.406
40926	0.406
40940	4.995
40957	6.609
40961	1.93
41135	74.044
41161	9.402
41214	0.057
41259	0.051
41275	0.058
41276	0.058
41278	0.041
41286	4.995
41348	6.348
41364	0.433
41365	0.813
41366	0.433
41367	0.813
41407	0.877
41409	0.058
41414	0.029
41416	0.128
41450	0.433

41513	0.057
41521	0.061
41523	0.057
41524	0.064
41535	0.051
41550	0.71
41599	0.038
41608	0.013
41615	0.05
41621	0.307
41622	0.121
41623	0.307
41624	0.121
41668	0.166
41673	0.046
41674	0.166
41677	0.023
41680	0.029
41682	0.051
41701	0.098
41720	0.013
41722	7.562
41729	0.036
41817	0.076
41823	0.076
41974	4.409
41976	0.29
42003	0.076
42021	11.573
42074	0.396
42078	0.036
42094	0.862
42101	1.236
42108	0.057
42125	0.029
42201	0.058
42208	0.044
42213	0.058
42218	0.057
42280	0.155
42332	0.155
42345	0.877
42371	1.343
42380	0.046
42394	0.036

42397	0.057
42399	6.609
42406	0.057
42455	0.311
42500	0.433
42514	0.877
42538	6.348
42576	9.402
42590	9.402
42591	3.598
42604	0.577
42706	0.058
42708	0.458
42791	0.051
42792	0.057
42793	0.311
42798	0.406
42821	0.153
42834	1.343
42905	0.207
42913	7.562
42915	0.877
43028	0.877
43032	0.057
43045	0.057
43089	9.085
43096	0.061
43152	6.731
43198	0.046
43199	0.877
43233	0.058
43238	0.051
43244	0.051
43252	0.058
43260	0.914
43315	0.939
43414	0.058
43426	0.061
43441	0.041
43447	0.877
43456	0.048
43479	0.058
43504	0.057
43513	0.046
43536	0.877

43541	0.121
43550	0.038
43554	0.877
43616	0.539
43617	6.506
43652	0.586
43657	1.276
43766	0.057
43812	0.493
43891	0.877
43904	0.057
43911	0.098
44022	0.386
44112	0.158
44159	0.058
44187	0.104
44210	0.058
44232	210
44233	0.016
44258	0.877
44261	0.386
44313	0.061
44371	0.406
44483	0.048
44487	2.518
44703	0.121
44730	0.061
44800	0.098
44837	6.731
44867	0.862
44924	0.051
44986	0.098
45092	6.506
45145	0.061
45213	1.225
45216	0.048
45231	0.877
45233	0.032
45242	0.032
45256	0.061
45259	0.058
45262	0.453
45276	0.877
45298	0.058
45320	0.057

45325	0.458
45331	0.057
45348	0.029
45349	2.107
45439	9.085
45460	11.573
45549	3.598
45598	74.044
45645	0.029
45649	0.029
45736	0.371
45745	1.361
45766	2.723
45788	0.681
45790	0.681
45800	1.779
45811	0.445
45814	0.158
45827	1.361
45830	5.447
45842	0.098
45894	9.085
45929	2.723
45936	0.445
45982	0.445
46018	0.89
46019	1.334
46020	0.89
46021	0.445
46022	0.667
46141	0.057
46159	1.334
46187	5.447
46279	0.541
46342	0.016
46354	7.04
46440	0.098
46461	0.667
46511	0.058
46544	0.058
46555	6.609
46559	2.518
46560	6.731
46578	1.128
46587	0.29

46633	0.058
46638	0.057
46643	0.406
46657	9.402
46658	11.573
46659	1.779
46729	0.058
46733	3.598
46763	0.877
46801	0.035
46818	0.035
46844	0.207
46846	0.058
46848	0.098
46860	0.057
46898	0.058
46904	0.058
46906	0.058
46919	0.813
46920	0.813
46921	0.048
46925	0.057
46940	0.433
46942	0.098
46967	0.023
46968	0.023
46970	0.037
46987	0.038
47003	0.128
47071	0.041
47072	45.472
47081	0.057
47116	0.058
47154	1.276
47200	0.877
47211	0.058
47350	0.603
47399	2.224
47401	0.061
47413	9.402
47460	2.224
47501	0.207
47508	0.058
47555	4.409
47579	0.042

47671	7.562
47672	7.562
47706	0.013
47753	0.787
47759	7.04
47816	0.577
47820	0.076
47834	0.058
47847	0.051
47854	0.046
47867	1.301
47919	0.038
47949	1.041
47952	0.051
47985	0.046
47994	0.045
48004	0.051
48035	0.072
48059	0.057
48060	0.072
48062	0.057
48064	6.291
48065	0.035
48066	0.057
48071	0.052
48084	0.936
48090	0.541
48128	0.71
48129	0.877
48133	0.044
48136	0.038
48138	0.057
48148	0.71
48153	0.128
48157	0.877
48158	7.562
48161	0.098
48178	0.058
48183	0.493
48216	0.95
48218	0.311
48253	1.15
48259	7.562
48295	0.877
48301	0.877

48311	0.051
48326	0.936
48330	0.877
48354	0.877
48413	7.562
48434	7.562
48444	0.877
48483	7.562
48526	1.343
48535	0.058
48546	0.048
48561	0.877
48562	0.936
48568	0.057
48571	6.731
48597	0.058
48604	4.409
48622	0.877
48644	0.048
48675	0.061
48738	0.936
48775	0.051
48810	0.023
48816	0.877
48871	0.076
48880	7.562
48913	7.562
48964	0.057
49059	0.057
49096	0.058
49105	0.058
49132	0.603
49133	0.936
49219	0.877
49266	0.936
49277	0.057
49314	0.877
49323	0.406
49324	0.29
49395	8.77
49417	0.058
49432	0.936
49524	0.877
49575	0.058
49742	0.229

49787	0.945
49788	0.603
49791	3.025
49849	0.058
49862	0.603
49940	0.229
49976	4.409
50058	0.057
50059	0.359
50095	0.229
50117	0.936
50166	0.877
50232	0.877
50266	0.057
50269	0.207
50314	0.098
50317	0.207
50343	0.052
50363	0.936
50380	0.378
50421	0.038
50428	5.06
50468	0.038
50482	0.058
50504	0.058
50513	4.409
50532	0.044
50602	0.057
50628	0.048
50652	0.936
50659	0.128
50671	2.518
50726	3.025
50733	0.461
50785	0.057
50813	0.061
50862	0.541
50881	0.058
50929	2.518
50947	0.29
51084	0.051
51099	0.057
51118	0.072
51235	3.598
51237	0.603

51242	0.098
51284	0.718
51293	0.057
51327	0.051
51339	0.061
51343	0.076
51360	0.045
51381	0.058
51384	0.945
51595	0.877
51611	3.025
51614	0.057
51644	0.051
51769	0.936
51789	0.461
51808	0.424
51819	0.058
51827	0.064
51828	0.936
51829	0.045
51896	3.578
51923	0.061
51937	0.038
51943	0.936
52009	0.057
52085	0.051
52141	0.061
52154	0.057
52178	0.493
52216	0.229
52217	0.461
52220	1.93
52229	0.603
52338	0.057
52389	0.057
52400	0.71
52420	0.359
52455	0.877
52495	0.046
52509	6.291
52547	1.15
52592	0.461
52605	0.046
52617	0.936
52714	0.517

52785	6.915
52809	0.461
52856	0.057
52867	0.032
52888	0.038
52889	0.057
52929	0.038
52931	0.098
52948	0.877
52956	0.603
52966	0.058
52977	0.29
53062	17.128
53079	0.041
53106	4.409
53113	0.461
53116	0.945
53164	0.076
53181	7.562
53208	0.877
53287	0.051
53296	0.072
53331	0.936
53345	0.057
53384	0.057
53397	0.936
53417	7.562
53576	0.861
53600	0.128
53604	0.057
53617	0.057
53626	0.098
53639	0.046
53679	0.051
53700	0.045
53702	0.051
53709	0.962
53784	0.357
53803	0.057
53918	4.409
53929	0.71
53952	0.058
53961	1.236
53980	0.045
53999	0.128

54017	0.633
54021	0.311
54023	0.046
54063	42.859
54075	0.057
54085	0.962
54137	0.048
54179	0.058
54304	0.098
54353	0.877
54354	0.044
54406	0.192
54463	0.057
54476	0.098
54484	6.291
54514	0.048
54518	0.057
54520	0.633
54660	0.424
54694	3.578
54713	0.058
54783	0.045
54790	0.962
54806	5.928
54853	0.877
54870	0.052
54877	0.036
54906	1.225
54979	6.731
55009	0.098
55044	0.051
55052	0.5
55099	0.311
55129	0.058
55139	0.036
55153	0.048
55206	0.262
55221	7.562
55233	0.048
55245	0.877
55309	0.038
55313	0.048
55418	0.058
55425	0.107
55434	0.048

55454	0.098
55465	0.051
55486	0.098
55491	0.032
55505	0.045
55530	0.041
55535	0.072
55582	0.718
55624	0.072
55752	11.573
55817	0.877
55825	0.013
55832	4.409
55839	0.458
55852	0.458
55894	0.098
55913	0.057
55970	0.596
56006	0.058
56022	0.962
56039	0.098
56046	0.058
56071	0.603
56078	0.311
56106	0.453
56171	0.051
56178	2.37
56202	10.546
56205	0.058
56213	0.048
56266	0.051
56275	0.035
56282	0.603
56340	0.051
56441	0.936
56461	0.051
56491	0.541
56549	0.058
56554	0.453
56558	0.603
56559	0.051
56565	0.038
56566	0.058
56584	0.718
56651	0.052

56665	0.461
56670	3.598
56671	4.4
56688	6.291
56762	0.453
56788	0.633
56817	0.038
56898	0.207
56925	0.045
56945	0.058
57006	0.076
57007	0.023
57027	0.962
57033	0.461
57045	0.057
57052	0.945
57097	0.051
57107	0.032
57112	0.048
57120	0.042
57139	0.59
57162	0.057
57197	0.041
57297	0.064
57353	0.051
57370	0.045
57381	0.128
57433	0.058
57454	0.886
57465	0.058
57475	0.035
57487	0.051
57523	0.052
57527	0.072
57545	0.603
57623	4.409
57649	0.072
57650	0.058
57750	4.409
57752	0.057
57839	0.038
57865	0.051
57900	0.051
57929	0.058
57943	0.813

57972	0.032
58039	1.928
58048	0.057
58071	0.057
58114	0.945
58129	0.29
58190	0.71
58213	0.098
58217	0.229
58221	0.045
58248	6.291
58273	0.378
58279	0.235
58288	0.051
58290	0.046
58298	0.052
58316	0.046
58382	0.042
58383	0.05
58415	0.057
58472	0.357
58493	0.945
58499	4.315
58501	0.051
58523	0.05
58526	0.058
58572	0.076
58582	0.058
58636	0.058
58652	0.098
58708	0.098
58710	15
58737	0.962
58743	0.058
58766	7.888
58842	0.207
58848	0.058
58853	0.461
58855	0.051
58888	0.061
58960	0.042
59057	7.04
59067	0.057
59131	0.058
59147	0.104

59161	0.032
59203	0.936
59246	0.098
59289	0.311
59392	7.9
59442	0.051
59473	5.928
59479	0.051
59490	3.092
59553	0.057
59562	0.098
59584	0.633
59595	0.057
59599	0.058
59618	3.95
59678	0.493
59705	0.058
59820	0.032
59865	0.461
59878	0.045
59880	0.207
59970	0.378
59978	0.044
59986	0.051
59989	0.044
60035	0.057
60053	0.101

Source: BNF unit costs (2013 UK pounds). Available online: http://www.bnf.org/bnf/org_450080.htm.
Note(1): Product code descriptions available from https://www.cprd.com/ObservationalData/CodedData.asp#DrugsinPrimarycare.

STROBE Statement—Checklist of items that should be included in reports of ***cohort studies***

	Item No	Recommendation
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract **[See the title, page 1, and 'design' section of the abstract, page 2]**
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found **[See 'primary and secondary outcome measures' and 'results' sections of abstract, page 2]**
Introduction		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported **[See 'introduction' section, page 4]**
Objectives	3	State specific objectives, including any prespecified hypotheses **[See final paragraph of 'introduction' section, page 4]**
Methods		
Study design	4	Present key elements of study design early in the paper **[pages 4-7]**
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection **[pages 4-5]**
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up **[pages 4-6]**
		(*b*) For matched studies, give matching criteria and number of exposed and unexposed **[pages 7-8]**
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable **[pages 5-7]**
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group **[pages 6-7]**
Bias	9	Describe any efforts to address potential sources of bias **[See pages 7-8 with more information included in the 'study limitations' section, page 14]**
Study size	10	Explain how the study size was arrived at **[See pages 5-6 and 'rates of lumbar surgery in HES' and 'percentage of lumbar surgery patients with persistent postoperative pain (cases)' under 'results', pages 8-9]**
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why **[pages 7-8]**
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding **[page 7-8]**
		(*b*) Describe any methods used to examine subgroups and interactions **[n/a]**
		(*c*) Explain how missing data were addressed **[n/a]**
		(*d*) If applicable, explain how loss to follow-up was addressed **[n/a, the study inclusion criteria stipulated that all patients were required to have 2 years follow up in the data]**
		(*e*) Describe any sensitivity analyses **[page 8]**
Results		
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed **[pages 8-9]**
		(b) Give reasons for non-participation at each stage **[n/a]**
		(c) Consider use of a flow diagram **[n/a]**
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and

		information on exposures and potential confounders **[page 10 and table 1]**
		(b) Indicate number of participants with missing data for each variable of interest **[Table 2]**
		(c) Summarise follow-up time (eg, average and total amount) **[pages 12-13]**
Outcome data	15*	Report numbers of outcome events or summary measures over time **[Tables 2 and 3]**
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included **[n/a matched control group used to obtain net costs attributable to PPP]**
		(*b*) Report category boundaries when continuous variables were categorized **[n/a]**
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period **[n/a]**
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses **[page 13]**
Discussion		
Key results	18	Summarise key results with reference to study objectives **[Pages 13-14]**
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias **[Pages 14-15]**
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence **[Pages 15-16]**
Generalisability	21	Discuss the generalisability (external validity) of the study results **[Pages 14-15]**
Other information		
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based **[See 'funding' and 'competing interests' data uploaded with submission]**

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at http://www.strobe-statement.org.