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Lumbar spine fusion surgery versus best conservative care for patients with severe, persistent low back pain

a UK cross-sectional survey of clinicians and their views regarding randomization of patients into a future trial

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Aims

People with severe, persistent low back pain (LBP) may be offered lumbar spine fusion surgery if they have had insufficient benefit from recommended non-surgical treatments. However, National Institute for Health and Care Excellence (NICE) 2016 guidelines recommended not offering spinal fusion surgery for adults with LBP, except as part of a randomized clinical trial. This survey aims to describe UK clinicians' views about the suitability of patients for such a future trial, along with their views regarding equipoise for randomizing patients in a future clinical trial comparing lumbar spine fusion surgery to best conservative care (BCC; the FORENSIC-UK trial).

Methods

An online cross-sectional survey was piloted by the multidisciplinary research team, then shared with clinical professional groups in the UK who are involved in the management of adults with severe, persistent LBP. The survey had seven sections that covered the demographic details of the clinician, five hypothetical case vignettes of patients with varying presentations, a series of questions regarding the preferred management, and whether or not each clinician would be willing to recruit the example patients into future clinical trials.

Results

There were 72 respondents, with a response rate of 9.0%. They comprised 39 orthopaedic spine surgeons, 17 neurosurgeons, one pain specialist, and 15 allied health professionals. Most respondents (n = 61,84.7%) chose conservative care as their first-choice management option for all five case vignettes. Over 50% of respondents reported willingness to randomize three of the five cases to either surgery or BCC, indicating a willingness to participate in the future randomized trial. From the respondents, transforaminal interbody fusion was the preferred approach for spinal fusion (n = 19, 36.4%), and the preferred method of BCC was a combined programme of physical and psychological therapy (n = 35, 48.5%).

Conclusion

This survey demonstrates that there is uncertainty about the role of lumbar spine fusion surgery and BCC for a range of example patients with severe, persistent LBP in the UK.

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Take home message

- There are a number of accepted methods for the treatment of low back pain (LBP), both using best conservative care and surgical means.
- Most individuals would pursue conservative means in the first instance.
- Equipoise exists in the professional community to allow randomization in a randomized controlled trial between best conservative care and surgical fusion for LBP.

Introduction

With advancing age, low back pain (LBP) is a common musculoskeletal complaint, with between 50% and 60% of adults experiencing it in their lifetime.[1,2] While a number of identifiable pathologies can cause LBP (including metastatic disease, discitis, and spinal fractures), the commonest cause of LBP is defined as non-specific (84%).[3] This is due to the inability to identify a clear cause,[4] even after using a variety of imaging techniques and diagnostic tests. Most cases of adult non-specific LBP are self-limiting and managed through an alteration of activity and over-the-counter medication. Those individuals with severe and persistent symptoms, despite advice, pain relief, and primary care management, are referred to secondary care spinal services. Secondary care management typically includes non-surgical treatment with prescription medication (with a variety of non-steroidal anti-inflammatory drugs (NSAIDs), opioids, and medications such as gabapentin), exercise, and/or manual therapy (often provided by NHS physiotherapists), with some patients being referred on for spinal injections or radiofrequency denervation.[5] The current UK back pain pathway places lumbar spine fusion surgery at the end of the pathway for potential consideration after non-surgical treatments.[6] UK hospital episode statistics show that there were 4,000 fusions in the NHS in 2009/2010, reducing to fewer than 1,000 in 2018/2019 (unpublished Hospital Episode Statistics (HES) data).

Spinal fusion surgery is based on the premise that abnormal intervertebral movement associated with degenerative changes within the spinal unit (intervertebral disc and posterior facetal articulations) is a source of pain.[7] The Kirkaldy-Willis model also suggests that spinal degeneration occurs in a multi-staged fashion as a result of interactions between the three-joint complex of the intervertebral disc and posterior facetal articulations.[8] Abolition of that abnormal movement is thought to lead to the removal of the painful stimulus and thus the abolition or reduction of pain.[9] Spinal fusion for LBP is a controversial procedure that has been tested in a small number of randomized controlled trials (RCTs) internationally, each with different comparison groups.[10–15] The same six trials have been summarized in a systematic review.[16] Overall, the conclusion is that there is insufficient evidence that spinal fusion surgery leads to superior patient outcomes, although some trials do indicate modest benefits over the comparison treatments. The trials have been criticized with regard to methodological features, including high crossover rates and insufficient homogenous patient eligibility criteria. In addition, several trials were very challenging to recruit.

In 2021, the National Institute for Health Research (NIHR) Health Technology Assessment (HTA) issued a commissioned call for a new randomized trial to compare the outcomes of surgical fusion compared to conservative care for LBP. The successful UK trial application, named the FORENSIC-UK trial (FusiOn veRsus bEst coNServatIve Care), is a head-to-head comparison of lumbar spine fusion surgery at one or two levels of the lumbar spine by any accepted approach versus best conservative care (BCC) for non-specific LBP of more than six months' duration without symptoms that indicate the need for decompressive surgery.

Given the importance of patient eligibility for the future RCT, as well as the need to be able to recruit to the trial, it is important to ensure there is an understanding of the trial in the clinical community in the UK, which is key to ensuring the ability to identify, recruit, and randomize patients into the future trial.[17] Thus, in advance of the FORENSIC trial, to 1) explore the practices of those that deal with non-specific LBP and 2) assess the views around the potential position of equipoise for the trial, a survey of the practitioners who would be recruiting for the FORENSIC trial was undertaken. This aimed to provide an overall view of clinicians about the suitability of patients for such a future trial, and to describe their views regarding equipoise for the randomization of patients in a future clinical trial comparing lumbar spine fusion surgery versus BCC (the FORENSIC-UK trial).

Methods

The survey was a cross-sectional descriptive online survey of UK clinicians undertaken via email to all members of the spinal societies that are registered under the umbrella of the UK Spinal Societies Board (UKSSB) using the email lists held by UKSSB. These societies are the British Association of Spinal Surgeons (BASS), the Society for Back Pain Research (SBPR), the British Scoliosis Society (BSS), the British Association of Spinal Cord Injury Specialists (BASCIS), and the National Spine Network (NSN). Consequently, the survey was sent to a broad section of those in the UK that manage non-specific LBP in both the NHS, which is a free-at-the-point-of-delivery healthcare provider, and those in private, fee-paying healthcare settings. This sample frame was selected to obtain a representative view of the potential recruiters involved in the management of LBP in adults.

Potential respondents included pain specialists, orthopaedic and neurosurgical spinal surgeons, spinal injury physicians, pain specialists, and allied health professionals (AHPs, including physiotherapists and occupational therapists). It is noted that a number of people are members of more than one society and as such may have received more than one invite to complete the survey. However, only one response per individual was requested and there were no dual responses noted. Respondents were also informed of the aim of the survey and the fact that participation was voluntary.

The survey consisted of details about the age, employment, and experience of the respondent. There then followed a series of five hypothetical case vignettes based on current clinical practice (Table I). Each vignette consisted of a brief history, which was presented along with representative MRI imaging (a mid-sagittal T2 weighted image or a T2 weighted axial image of the relevant disc level). The survey, constructed using Microsoft Forms (Microsoft, USA), was sent out in January 2023 and was open for four weeks. A reminder email was sent to all potential respondents, again via UKSSB, after two weeks.

These five case vignettes were designed to describe both males and females of differing ages, body size (represented as BMI), and occupation. The presentations of LBP differed in their duration and severity, and in the presence of leg pain and neurological symptoms and signs such as numbness. Any previous treatments were also documented. These scenarios were developed to represent patients who were likely to be reviewed as potential participants for randomization into the FORENSIC trial.

All respondents were asked to indicate their first-choice management (surgery or BCC) if they were able to offer either without any restrictions to practice, and to outline the factors that influenced that decision. They were asked to indicate their preferred approach if pursuing nonoperative management for each vignette. Those respondents who could perform a spinal fusion were asked to indicate their preferred approach were they to perform that operation. Each vignette ended with a question on whether or not the respondent would consider randomization of this hypothetical patient into a trial of BCC versus spinal fusion surgery in the management of LBP.

Additionally, for the management of LBP, the survey asked for a definition of a good clinical outcome. The respondents were also asked whether or not they would be willing to partake in a RCT comparing BCC and spinal fusion surgery. The survey can be found in the Supplementary Material.

Analysis of the different descriptive factors of each of the vignettes was undertaken to assess which features of the presentation influenced the decision around the preferred management strategy that was undertaken, and whether the respondent would randomize that individual to a trial of BCC versus spinal fusion surgery.

An assessment of the distribution of the respondents' specialization (orthopaedic spine surgeon, neurosurgeon, AHP, or pain specialist), compared to the distribution of the occupation of the total society membership of the UKSSB, was made using a statistical analysis of binomial proportions.[18] This was used to analyze whether the proportion of respondents was biased relative to the total data frame.

Through consultation with the local Institutional Review Board and the Health Research Authority, this study has been deemed as research that does not require review and approval from a research ethics committee. This is because it does not collect sensitive or personal identifiable data, and is only recruiting NHS clinicians via professional networks.

Case Vignette 1 is a 26-year-old female teaching assistant with an eight-month history of LBP (severity 7/10). Her BMI is 16.4 kg/m^2 and she has no neurological symptoms or signs. She has had outpatient physiotherapy (education and exercise programme) and daily NSAIDs, with no improvement over time. Significant L5/S1 disc degeneration only.

Case Vignette 2 is a 49-year-old male surgeon with a BMI of 23 kg/m^2. He has a history LBP of three years and has had to reduce operating hours. He has been on an outpatient combined exercise and psychological programme. The pain radiates to the legs but there are no features of neural compression. L4/L5 disc degeneration only on imaging.

Case Vignette 3 is a 58-year-old male with a BMI of 42 kg/m^2 who has had fluctuating LBP for 15 years. He is now unable to work and has daily oral opioids in addition to occasional exercise and manual therapy. He has bilateral leg pain. Neural compression has been ruled out on imaging. Significant L5/S1 disc degeneration only.

Case Vignette 4 is a 37-year-old female who previously played rugby with ongoing LBP for five years. She is allergic to opioids and cannot tolerate NSAIDs. Paracetamol and self-help exercises (not via accessing health professionals – yoga, pilates classes) have been of no help. Her BMI is 20 kg/m^2 and she has no leg pain and no neurological symptoms or signs. Minor spondylolisthesis (Grade 1) at L5/S1.

Case Vignette 5 is a 63-year-old male construction worker with a BMI of 18.5 kg/m^2 who has had previous self-limiting episodes of LBP over the last 20 years. LBP has been persistent since he stumbled in the street 12 months ago. No success with inpatient pain management in addition to cognitive behavioural therapy (CBT). He has intermittent numbness in both feet. Imaging shows only significant L4/L5+ L5/S1 disc degeneration with no neural compression.

Statistical analysis

Statistical significance was assessed using the statistical analysis of binomial proportions test with a pre-defined level of significance of $p < 0.05$. All analysis was performed using R Core Team (2021) (R Foundation for Statistical Computing, Austria).

Results

The survey had 72 respondents out of a total of 800 to whom the survey was sent, giving a percentage response rate of 9.0%. Most respondents were orthopaedic spine surgeons (n = 39), along with neurosurgeons (n = 17) and AHPs (n = 15). There were also one pain specialist who responded to the survey. There was no statistically significant differences between the number of respondents of a particular speciality as a proportion of the total number of respondents ($p = 1.000$, statistical analysis of binomial proportions) and the number of that speciality as a total of the entire society membership for orthopaedic spinal surgeons ($p = 1.000$) and AHPs ($p = 0.970$). There was a statistically significant difference for neurosurgeons ($p = 0.004$, statistical analysis of binomial proportions) and pain specialists ($p = 0.020$). Of the survey respondents, 92% (n = 67) predominantly practice within the NHS, with the remainder practising within the private sector. The length of time in practice was across new starters (0 to 5 years) to senior clinicians (more than 20 years). Table II shows the choice of BCC or fusion surgery depending on the profession of the respondent.

Decision-making was explored based on each vignette and the demographic details of respondents. Overall, the majority of respondents chose BCC as their initial management strategy for all vignettes in the first instance, irrespective of whether the respondent was a surgeon, an AHP, or a pain specialist (Table III). Of note, some of the orthopaedic and neurosurgical groups indicated that they would also consider other techniques (not fusion surgery or BCC); these included facet joint injections, lysis block injections, decompression-only surgery, and lumbar disc arthroplasty. It was also noted that both diagnostic injections and further imaging may be used to further clarify the best therapeutic target and thus the best treatment strategy. In general, the reasons given around treatment decisions were age, sex, BMI, radiological appearance, and previous or current treatments, specifically

Table I. The details of the case vignettes.

Case	Age, yrs	Sex	Duration of symptoms	BMI, kg/m^2	Leg pain	Leg numbness	Levels of spinal pathology on imaging	Previous non-pharmacological intervention	Previous use of analgesia
1	26	F	8 mths	16.4	No	No	L5/S1	Yes	OTC*
2	49	M	3 yrs	23.0	Yes	No	L4/L5	Yes	No
3	58	M	15 yrs	42.0	Yes	No	L5/S1	Yes	Opioids
4	37	F	5 yrs	20.0	No	No	L5/S1	Yes	OTC*
5	63	M	20 yrs	18.5	No	Yes	L4/5; L5/S1	Yes	Inpatient pain management

*OTC - over the counter analgesia available in the UK without medical prescription, which are paracetamol, ibuprofen and co-codamol (8 mg paracetamol / 500 mg codeine).

Table II. Management choices and respondents' professions.

Profession	BCC, n (%)	Fusion surgery, n (%)	Other, n (%)
AHP (n = 15)	67 (89.3)	8 (10.7)	0 (0)
Neurosurgeon (n = 17)	74 (87.1)	5 (5.9)	6 (7)
Orthopaedic spine surgeon (n = 39)	159 (81.6)	19 (9.7)	17 (8.7)
Pain specialist (n = 1)	4 (80)	1 (20)	0 (0)

Each participant answered the question reported in this table five times, reflecting the five vignettes. This is why the number of responses is greater than the number of respondents. The percentage is the number of positive responses over the five vignettes compared to the total possible number of responses. The 'Other' column here includes options for management that are not included with in either 'BCC' or 'Fusion Surgery' and includes lumbar disc replacement, injections, and decompressive only surgery.
AHP, allied health professional; BCC, best conservative care.

Table III. The first choice of management compared to time in practice.

Duration of practice, yrs	BCC, n (%)	Fusion, n (%)	Other, n (%)
< 5 (n = 8)	35 (87.5)	4 (10.0)	1 (2.5)
6 to 10 (n = 13)	51 (78.5)	10 (15.3)	4 (6.2)
11 to 15 (n = 15)	64 (85.3)	7 (9.3)	4 (5.3)
16 to 20 (n = 11)	51 (92.7)	0 (0)	4 (7.3)
> 20 (n = 25)	103 (82.4)	12 (9.6)	10 (8.0)

Each participant answered the question reported in this table five times, reflecting the five vignettes. This is why the number of responses is greater than the number of respondents. The percentage is the number of positive responses over the five vignettes compared to the total possible number of responses.

the appearance on MRI. Specifically for Case Vignette 3, weight management and the input of a dietician were also indicated key management strategies. Table IV shows the choice of BCC or fusion surgery depending on whether the clinician was working in the public or private sector.

In those who would perform fusion surgery, surgeons opted for a number of different surgical approaches and methods of obtaining fusion; the distribution of this differed with each vignette.

When directly questioned about whether, if faced with the clinical situation and imaging findings described in the vignette, the clinician would have a position of equipoise that would allow for participation in the FORENSIC trial and randomization to either BCC or fusion surgery, the majority were willing to do so. Across all vignettes, 50.7% (n = 37) were willing to randomize the patients, and this varied between vignettes from 37% (n = 27) to 60.3% (n = 42) by individual vignettes.

Table V shows the percentage of those who chose either BCC or fusion surgery as their initial preferred method of management along with the percentage of these subsets of respondents (i.e. out of those who chose BCC or fusion) who were willing to randomize to either BCC or fusion surgery. Most of the respondents who would offer spinal fusion surgery would also randomize patients into the trial.

For those respondents who could offer fusion surgery as an option for management, Figure 1 shows the surgical approach and fusion technique they indicated they would perform for each of the case vignettes. Transforaminal interbody fusion (TLIF) was the preferred approach for spinal fusion (36.4%, n = 19). Other options were anterior lateral interbody fusion (ALIF), lateral or extreme lateral interbody fusion (XLIF), oblique or anterior to psoas lumbar interbody fusion (OLIF), posterior lumbar interbody fusion (PLIF), and posterior lateral grafting (PLG). The other options highlighted by the respondents include disc arthroplasty, decompression, medial branch block, radiofrequency ablation, diagnostic injection, and a combination of procedures (such as ALIF and OLIF for Case Vignette 5). Furthermore, for Case Vignette 3, one of the respondents would not operate unless a bariatric intervention was carried out in advance.

If choosing BCC for the patient, most of the respondents (48.5%, n = 35) would advise a combined physical and psychological therapy (Figure 2). The most common

Table IV. The first choice of management compared to area of practice.

Area of practice	BCC, n (%)	Fusion, n (%)	Other, n (%)
NHS (n = 66)	285 (86.5)	29 (8.7)	16 (4.8)
Private (n = 6)	18 (60)	4 (13.3)	8 (26.7)

BCC, best conservative care.

Table V. Best conservative care or fusion and the decision to randomize.

	BCC as the first preferred management method		Fusion surgery as the first preferred management method	
Vignette	n (%)	Willing to randomize, n (%)	n (%)	Willing to randomize, n (%)
1	64 (87.8)	37 (57.8)	4 (5.5)	4 (100)
2	58 (79.5)	28 (48.3)	7 (9.6)	7 (100)
3	68 (93.2)	25 (36.8)	3 (4.1)	2 (66.7)
4	59 (80.8)	27 (45.8)	9 (12.3)	9 (100)
5	60 (82.2)	24 (40)	10 (13.7)	9 (90)

BCC, best conservative care.

analgesia option that would be offered is non-prescription analgesic medications such as paracetamol and ibuprofen (Figure 3). Other conservative management options that the respondents would offer include advice and education on self-management, manual therapy, psychological therapy (e.g. cognitive behavioural therapy), outpatient pain management, exercise of any type, exercise and manual therapy, and inpatient pain management.

None of the patients would be offered intravenous opioids or any form of intravenous patient-controlled analgesia (PCA). Some other pain management options proposed include local anaesthesia patches, amitriptyline, and nefopam, while other respondents would rather seek specialist pain management advice. The respondents all commented that a good outcome could be measured using an improvement in health-related quality of life scores, a reduction in pain, and an improvement in function and ability to work.

Overall, 40 respondents (54.8%) were willing to participate in the clinical trial, 22 (30.1%) were not willing to participate, and 11 (15.1%) were undecided.

Discussion

It is not yet clear what the best management strategy is for non-specific LBP, and there is continued controversy over the benefits of conservative care versus surgical intervention. The historic literature around this subject is mixed. While there has been a number of studies that extoll the benefits of one management strategy over the other,[19] the quality of that evidence is poor. The six RCTs that have been undertaken in this area have not provided a definitive answer.[10–15]

The Medical Research Council (MRC) spine stabilization trial recruited 349 participants aged 18 to 55 years, with chronic LBP of at least one year's duration, who were eligible for spinal fusion surgery. There was no clear evidence that primary spinal fusion surgery was more beneficial than intensive rehabilitation.[10]

The RCT of lumbar instrumented fusion and cognitive intervention and exercise in patients with chronic LBP and disc degeneration by Brox et al[11] recruited 64 patients aged 25 to 60 years who had LBP of over one year. This trial concluded that there were equal improvements in patients randomized to cognitive interventions and exercise compared with those who had lumbar fusion. Brox et al[15] also found, in another RCT, that patients with chronic LBP after previous surgery for disc herniation made no significant improvement with spinal fusion surgery over nonoperative management. Mannion et al[20] also noted in their multicentre, long-term clinical follow-up of 473 patients in Norway and the UK that there was no difference in self-rated clinical outcomes between spinal fusion surgery and nonoperative management at 11 years.

On the other hand, Fritzell et al[12] concluded from their randomization of 294 patients referred to spinal centres from 1992 to 1998 with a duration of symptoms of at least two years that lumbar fusion can reduce pain and disability more efficiently than non-surgical treatment in a well-informed group of patients.

Ohtori et al,[14] in their RCT involving 41 patients with discogenic LBP of an average of 7.5 years to either anterior interbody fusion or posterolateral fusion with pedicle screw instrumentation, compared to a minimal treatment control, found outcomes to be better within the surgical groups.

From the health economic standpoint, Fritzell et al[13] also found that while the overall cost of lumbar fusion surgery was higher than conservative care, the treatment effects were better with spinal fusion surgery.

Given that surgery comes with a small but defined risk of complications, including permanent neurological injury and mortality, it is only appropriate to expose patients to these risks if there is a realistic chance that they will derive benefit from the procedure, and that this procedure will be more beneficial than an intervention with less risk (BCC). Due to the lack of a clear direction from the literature, the National Institute for Health and Care Excellence (NICE) has declared that fusion surgery for non-specific LBP is only appropriate within the framework of a RCT.[6] This statement directly led to the commissioned call for a RCT from the NIHR and the subsequent FORENSIC trial. This survey aids in improving our understanding of the views and practices of the UK spinal community with regard to individuals with a clinical presentation that would be eligible for recruitment to the FORENSIC trial.

The majority of respondents to the survey would choose BCC for the vignettes presented as their first choice for management, with the percentage varying between respondents who practise in the NHS and those in the private sector. While we do not know why this has occurred, it is possibly due to the differences in the population of patients presenting to the private sector. However, this is a point that should

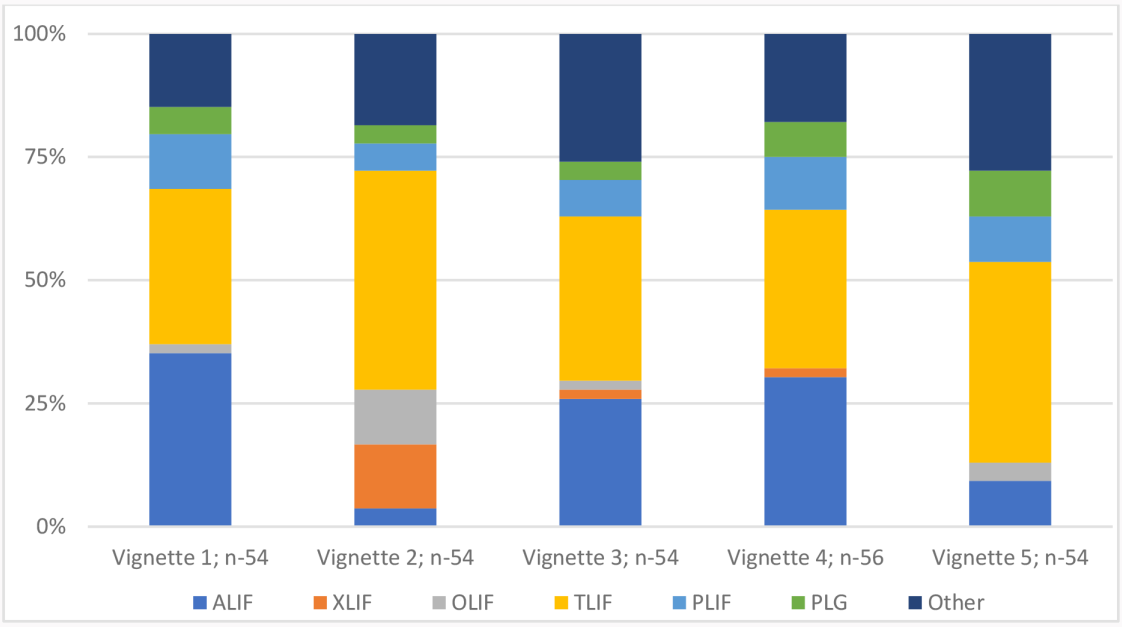

Fig. 1
Approach to spinal fusion. ALIF, anterior lateral interbody fusion; OLIF, oblique or anterior to psoas lumbar interbody fusion; PLG, posterior lateral grafting; PLIF, posterior lumbar interbody fusion; TLIF, transforaminal interbody fusion; XLIF, lateral or extreme lateral interbody fusion.

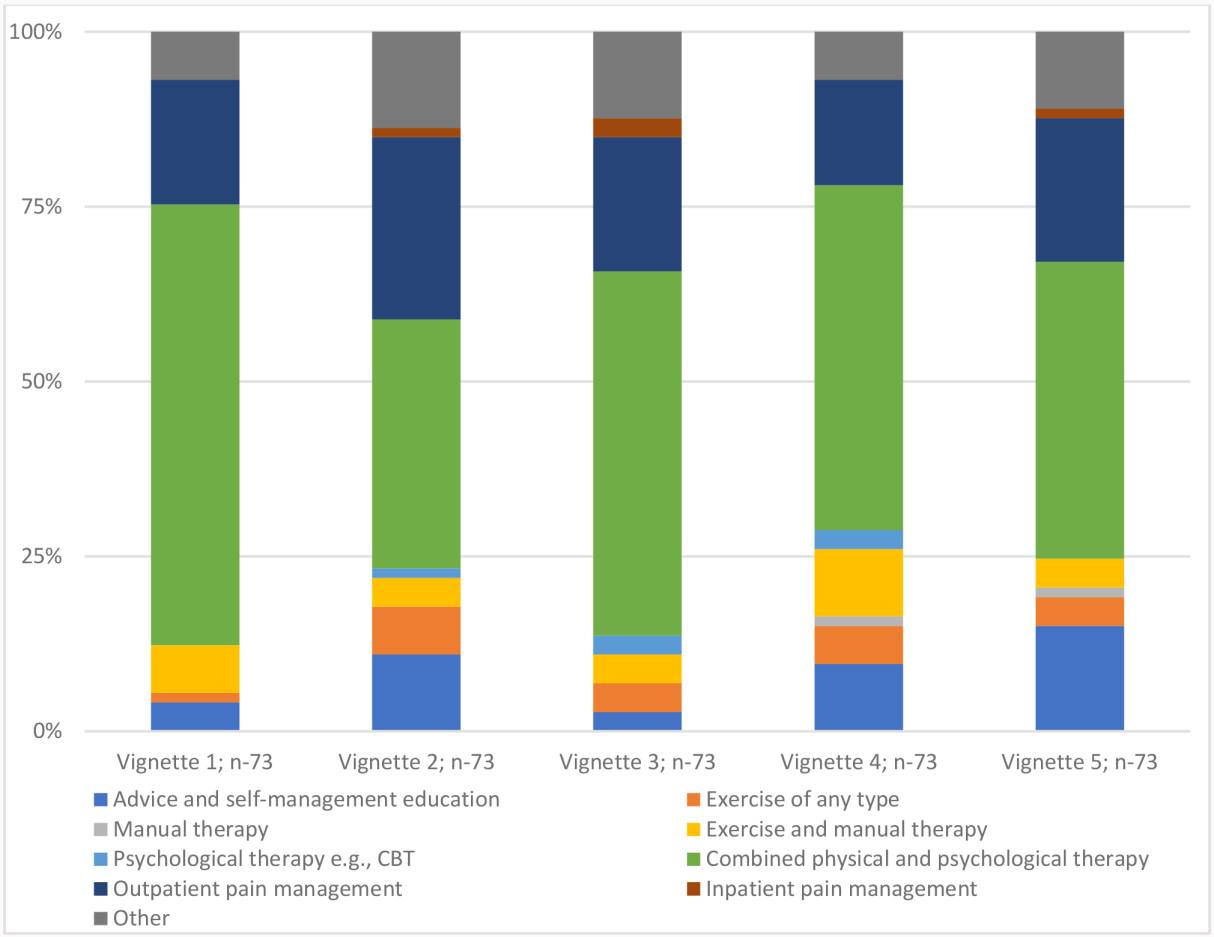

Fig. 2
Preferred option for best conservative care. CBT, cognitive behavioural therapy.

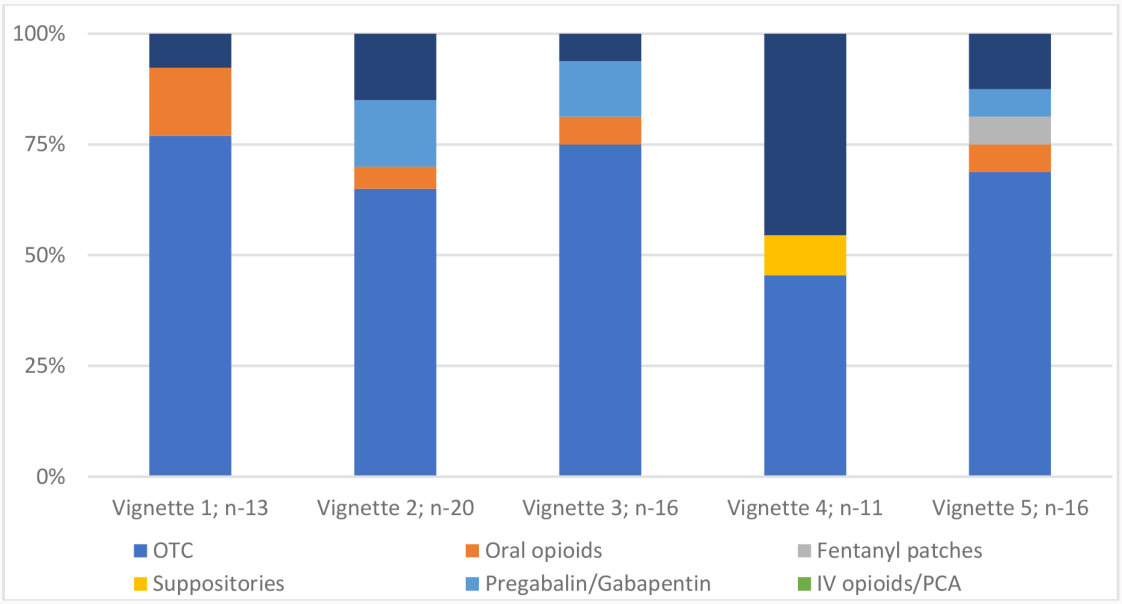

Fig. 3
Preferred medications prescribed for best conservative care. OTC, over the counter; PCA, patient-controlled analgesia.

be considered in the FORENSIC trial for reasons of potential selection bias.

Approximately half of the respondents were willing to randomize the patients to a clinical trial of BCC versus spinal fusion surgery after considering different patient factors. This information is important, as it indicates that there is a group of UK clinicians who would be active in recruitment for the study. It also suggests the need for re-evaluating the current guidelines as more options to consider with spinal fusion surgery have become available since the 2016 NICE guidelines, including minimally invasive approaches that may impact patient outcomes.[19] This is independent of factors such as the duration of the clinician's practice, their sub-speciality, and their sector of practice (NHS or private), as we were unable to establish distinct subgroups among the respondents. This provides confidence that, in the UK, patients could be recruited into future trial comparing these two treatment approaches.

In highlighting the limitations of this work, it is important to note that the case vignettes are hypothetical and do not represent an exhaustive list of the clinical presentations or diagnostic workups of those with LBP. However, these vignettes were designed by experts in spinal surgery, spinal rehabilitation, and clinical trial methodology to represent the breadth of the likely presentation of potential participants to the FORENSIC trial, considering the inclusion and exclusion criteria. Also, it is important to note that the setting of the survey does not represent all of the nuances of clinical decision-making which are made on an individual, patient-specific basis, and includes a number of factors that could not be assessed here such as the level(s) of disease and the capacity of the centre.[21] It is not possible to reflect all presentations in our five clinical vignettes, and inevitably there will be facets of presentation (pain patterns, etc) and investigations (SPECT-CT) that are not represented here. However, we feel that there is the required variation in presentation in the vignettes to explore with respondents some of the features that could affect their decision-making. Furthermore, we shared this study with a set number of clinicians who may or may not participate in the trial when it commences – although 54.8% of the respondents were willing to participate in the trial and 15.1% were undecided. Therefore, we might paint a general picture with this survey that may not accurately represent the population of clinicians who will be recruiting patients into the clinical trial. We acknowledge that the response rate is low, however considering the diversity in the professions of the respondents alongside some of their other demographics, including (importantly) the lack of a statistically significant difference between those who responded and the total society membership, we think it is reasonable to assume that they are a representative cross-section of the larger population of LBP clinicians in the UK. This is especially important considering that the FORENSIC trial will investigate both function and disability alongside cost-effectiveness, and will likely result in guidelines that will shape future management of LBP in the UK.

The NICE guidelines of 2016 comment that there is no evidence that establishes the superiority of spinal fusion surgery when compared to the BCC.[6] The clinicians who participated in this survey have been practising under these guidelines; despite this, a reasonable percentage of them still feel it appropriate to be able to offer spinal fusion surgery if there were no restrictions to the care they are allowed to pursue. This is counter to the NICE guidelines and poses the hypothesis that fusion surgery may remain a viable management option for LBP.[6] The further research planned comparing fusion surgery to BCC will help to resolve this clinical uncertainty. The work presented here demonstrates the breadth of practice in those who manage non-specific LBP, and that there are clinicians such that the FORENSIC RCT should be able to recruit to target and provide an answer that will influence future guidelines.

There has been a restriction on the options available in the management of LBP in the UK since the publication of the

NICE guidelines of 2016. This study demonstrated that there is a group of clinicians practising in the UK who would recruit patients into a trial comparing spinal fusion surgery and the BCC for patients with LBP in the UK.

Supplementary material

Description of the case vignettes and questions asked in the survey.

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Data sharing

The data that support the findings for this study are available to other researchers from the corresponding author upon reasonable request.

Ethical review statement

Through consultation with the local Institutional Review Board and the Health Research Authority, this study has been deemed as research that does not require review and approval from a research ethics committee. This is because it is does not collect sensitive or personal identifiable data, and is only recruiting NHS clinicians via professional networks.

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