Versus Arthritis MSK Decision Aids - Back Pain Rapid Evidence summaries

Notes:

(1) RCT evidence included in the NICE guidelines is unlikely to pick up adverse events, particularly in the long term. Trials also tend to exclude people who will be using treatments in the real world, including those who are older, have comorbidities, etc. Additional evidence from observational studies would better estimate harm.
(2) Risk (prognostic stratification) to guide decision-making is recommended by NICE, but not included here
(3) Presenting average improvements in pain or function with treatment would be possible, but as discussed with the oversight group, may be misleading as future likely changes strongly depend on an individual patient's current level of pain and disability. The same holds for data regarding (treatment) response rates.
(4) The evidence consistently showed only small or moderate average effects for most (if not all) treatment options
(5) Consistency and way of describing harms and benefits in the green column has been agreed with the oversight group and matches text included in the decision aids)

Sources	NICE recommendations	Overall response rate	Pain intensity	Function	Adverse events	**Interpretation of results (for decision aid)**
PART 1: Early presentation of LBP						
Imaging (X-ray, CT scan, MRI)						
NICE LBP guideline – mostly based on one trial and ; Lemmers et al. 2019 systematic review (HC utilisation)	**3 Do not routinely offer imaging in a non-specialist setting for people with low back pain with or without sciatica.** **4 Explain to people with low back pain with or without sciatica that if they are being referred for specialist opinion, they may not need imaging.** **5 Consider imaging in specialist settings of care (for example, a musculoskeletal interface clinic or hospital) only if the result is likely to change management.**	**From NICE guidance:** No evidence found for response to LBP management (with or without imaging). There has only been one trial – conducted in secondary care, showing very small benefits; most observational cohorts show slightly poorer outcomes and increased healthcare use	**From Lemmers:** Average pain severity (0-10) after 4 months was 0.09 (95% CI -0.28 to 0.1) lower in people who had received a scan compared to those who did not have a scan: not different	**From Lemmers:** Average function scores (RMDQ, 0-24) after 4 months for people receiving a scan was 0.02 higher (95%CI -0.44 to 0.49) compared to those who did not have a scan: not different	No evidence found, but studies report absence or very low frequency of serious conditions in people not offered a scan for LBP.	– – **– 0** + + + Usually a health professional can diagnose someone from their symptoms and by examining them. That means that most people do not need tests or scans.

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Self-care and self-management						
NICE guideline, Oliveira 2012 meta-analysis	**7. Provide people with advice and information, tailored to their needs and capabilities, to help them self-manage their low back pain with or without sciatica, at all steps of the treatment pathway.** **Include:** **information on the nature of low back pain and sciatica encouragement to continue with normal activities.**		**From Oliveira:** Self-management programmes have a small effect on pain (0-100): mean difference at short-term follow-up (less than 6 months after randomisation): -3.2 (95% CI -5.1 to -1.3) Long-term effects are slightly larger: -4.8 (95% CI -7.1 to -2.5) for pain (0-100)	**From Oliveira:** Self-management programmes have a small effect on disability (0-100) in the short-term (less than 6 months after randomisation): -2.3 points (95% CI -3.7 to -1.0), and in the long-term: -2.1 (95% CI -3.6, -0.6).	From NICE: No evidence of harm	– – – 0 **+** + + Most people are likely to experience a small benefit from self-management (staying active, taking part in group activity), especially in the long term (after 6 months). Benefit may be greater for quality of life, than for back pain or function specifically
Paracetamol						
NICE LBP guideline [1 RCT; n=1097 (Williams 2014)] Acute LBP with or without sciatica; 12 week follow up. Excludes 3rd arm of trial receiving paracetamol as required Roberts 2014 (observational studies)	**25. Do not offer paracetamol alone for managing low back pain.**	**From RCT:** At 12 weeks 466/550 (85%) in paracetamol group, and 461/547 (84%) in placebo group reached sustained recovery	**From NICE:** VAS (0 to 10); n=1011 Mean pain 0.1 lower (95% CI -0.38 to 0.18) for paracetamol vs placebo (control mean 1.3)	**From NICE:** RMDQ (0 to 24); n=1007 Mean function 0 higher (95% CI -0.57 to 0.57) for paracetamol vs placebo (control mean 2.4)	**From RCT:** Any adverse event (up to 12 weeks): - 99/534 (19%) pcm vs 98/531 (18%) placebo Serious adverse event - 5/550 (1%) pcm vs 5/547 (1%) placebo **From Roberts SR**. Dose-response shown for increased relative rate of mortality, increased risk ratio of all cardiovascular adverse events, increased relative rate of gastro-intestinal adverse events or bleeds and increasing odds ratio of ≥30%	– – – **0** + + + There is no good evidence that taking paracetamol on its own will help people with low back pain or sciatica.

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					decrease in estimated glomerular filtration rate	
NSAIDs						
NICE LBP guideline/ Machado 2017 (Spinal pain; systematic review) <=4 months	**21. Consider oral non-steroidal anti-inflammatory drugs (NSAIDs) for managing low back pain, taking into account potential differences in gastrointestinal, liver and cardio-renal toxicity, and the person's risk factors, including age.** **22. When prescribing oral NSAIDs for low back pain, think about appropriate clinical assessment, ongoing monitoring of risk factors, and the use of gastroprotective treatment.** **23. Prescribe oral NSAIDs for low back pain at the lowest effective dose for the shortest possible period of time.**		VAS (0 to 10) **From Machado review** Immediate term: less than 2 weeks (all spinal pain; 23 trials; n=5217) mean difference −9.2 (95% CI −11.1 to −7.3) and NNT 5 (95% CI 4 to 6) for all NSAIDs compared with placebo. Short-term: ≤ 3 months (all spinal pain; 9 trials; n=2611) mean difference −7.7 (95% CI −11.4 to −4.1) and NNT 6 (95% CI 4 to 10) for all NSAIDs compared with placebo.	RMDQ (0 to 24) Immediate term: < 2 weeks (all spinal pain; 12 trials; n=2667) mean difference −8.1 (95% CI −11.6 to −4.6) for all NSAIDs compared with placebo. Short-term: ≤ 3 months (all spinal pain; 8 trials; n=2086) mean difference −6.1 (95% CI −9.5 to −2.8) for all NSAIDs compared with placebo.	No difference for NSAIDs versus placebo in rates of any adverse events: up to 12 months (RR 1.1, 95% CI 1.0 to 1.2; 21 trials; n=5153), in serious adverse events (RR 1.5, 95% CI 0.4 to 5.2; 2 trials; n=635) or dropouts due to adverse events (RR 1.0, 95% CI 0.6 to 1.6; 9 trials; n=3283). Significantly higher gastrointestinal adverse events in NSAID groups compared with placebo (RR 2.5, 95% CI 1.2 to 5.2); 28/702 (4%) for NSAIDs versus 9/465 (2%) for placebo.	– – **–** 0 **+ +** + Most people with back pain or sciatica will have less pain if they take NSAID tablets, at least in the first 3 months of taking them. These should be taken at the lowest dose that works for the shortest possible time. NSAIDs may not be right for people with some other health conditions. Most people should take tablets to protect the stomach together with NSAIDs. Many people find that NSAIDs work better if they take them regularly instead of waiting for pain to get bad.
Opioids						
NICE LBP guideline/ Tucker 2019 (acute and chronic LBP; systematic review)	**26. Do not routinely offer opioids for managing acute low back pain (see recommendation 24).**	**From Katz trial** (n=389; 12 weeks) – Patient global impression of change (p<0,0001): More people	**From Tucker SR** Short term <3 months opioid analgesic reduced pain (0-100) compared with placebo (MD −8.98;	**From guideline** RMDQ (0 to 24); 7 trials, n=1510; <4 months. Mean function 1.32 lower (95% CI -1.88 to -0.75) for	**From Tucker SR** Higher rate of overall harms at short term (up to 4 months) for opioids (1130/2030,	– **– – 0** **+** + + People should use only use weak opioids if a

Sources	NICE recommendations	Overall response rate	Pain intensity	Function	Adverse events	**Interpretation of results (for decision aid)**
	27. Do not offer opioids for managing chronic low back pain.	rated as 'improved' in opioid group (78/193, 40.4%) than placebo group (63/196, 32.1%) More people rated as 'Very much improved' in opioid group (51/193, 26.4%) than placebo group (28/196, 14.3%)	95%CI −11.71 to −6.25; 13 trials, n=3071)	opioids than placebo (control mean function 10.2)	56%) compared with placebo (1130/2030, (56%) vs 804/2018 (40%); RR 1.42; 95%CI 1.24 to 1.63; 13 trials, n=4048) Rate of serious harms higher for opioid groups than placebo groups (34/1281 (3%) vs 13/1277 (1%); RR 2.22; 95%CI 1.19 to 4.14; 8 trials, n=2558) Withdrawals from trials due to harms not significantly higher for opioids than placebo (238/2032 (12%) vs 112/2016 (6%); RR 1.43 95%CI 0.75 to 2.72; 13 trials, n=4048)	health professional says that NSAIDs are not right for them, if NSAIDs have not worked well enough, or if NSAIDs have caused side effects. Weak opioids include codeine, taken with or without paracetamol. People should only use opioids for short periods of time. That is because opioids can cause side effects and addiction. Health professionals do not recommend that people take strong opioids for back problems or sciatica. Strong opioids include tramadol, morphine, and oxycodone.
Neuropathic pain medication						
Chou 2017 [systematic review for ACP guidelines] Shantanna 2017; Enke 2018 (systematic reviews on anticonvulsants)	**1.2.24 Do not offer selective serotonin reuptake inhibitors, serotonin–norepinephrine Re-uptake inhibitors or tricyclic antidepressants for managing low back pain.**		**From Chou 2017** Chronic LBP: Selective serotonin reuptake inhibitors generally no effect vs placebo on pain [1 SR (3 RCTs); Moderate strength of evidence] Duloxetine showed a small effect (< 3 months) on	**From Chou 2017** Chronic LBP: No evidence found for effectiveness of Selective serotonin reuptake inhibitors generally on function. Duloxetine showed a small effect on function (< 3 months) vs placebo [3	**From Chou 2017** Duloxetine: no differences between duloxetine and placebo in the risk for serious adverse events, but increased risk for withdrawal due to adverse events (3 trials: odds ratio,	**– – – 0 + + +** There is no good evidence that people with sciatica or back pain get help from nerve pain treatments. Drugs like gabapentin or pregabalin can have

Sources	NICE recommendations	Overall response rate	Pain intensity	Function	Adverse events	**Interpretation of results (for decision aid)**
	1.2.25 Do not offer anticonvulsants for managing low back pain.		pain vs placebo [3 RCTs; Moderate strength of evidence] Tricyclic antidepressants no effect vs placebo for CLBP [1 SR (4 RCTs); moderate strength of evidence] **From Shantanna 2017** Gabapentinoids compared with placebo (3 studies, n = 185) showed minimal improvement of pain (MD = 0.22 units, 95% CI [−0.5 to 0.07] I2 = 0%; GRADE: very low) **From Enke 2018** (9 RCTs, n=859) Anticonvulsants are not effective to reduce pain or disability in low back pain or lumbar radicular pain in the short term (< 3 months) (pooled MD for LBP pain –0.0, [–0.8 to 0.7]) or for lumbar radicular pain (immediate term, pooled MD –0.1, 95% CI –0.7 to 0.5).	RCTs; Moderate strength of evidence] Tricyclic antidepressants no effect vs placebo for function [low strength of evidence, 1 SR (2 RCTs)] Gabapentin/pregabalin - Unable to estimate effect vs placebo due to insufficient evidence in 2 RCTs	2.72 [CI, 1.74 to 4.24]; I2 = 0%). Duloxetine was associated with increased risk for nausea (p < 0.05). **From Shantanna 2017** Compared with placebo gabapentinoids have higher risk of: dizziness- (RR = 1.99, 95% CI [1.17 to 3.37]); fatigue (RR = 1.85, 95% CI [1.12 to 3.05]); visual disturbances (RR = 5.72, 95% CI [1.94 to 16.91]). NNH: 7 (4 to 30); 8 (4 to 44); and 6 (4 to 13) respectively. **From Enke 2018** (Increased risk of adverse events compared with placebo (pooled risk ratio [RR] 1.4, 95% CI 1.2 to 1.7, 6 studies), mostly drowsiness or somnolence, dizziness, and nausea.	side effects, such as dizziness, drowsiness, or nausea.
TENS						
Binny 2019 [systematic review] Wu 2018 [meta-analysis]	**Do not offer transcutaneous electrical nerve simulation (TENS) for managing**		From Binny 2019 – Acute LBP: TENS over 4–5 weeks versus placebo/sham provided inconclusive evidence for pain relief;	**From Wu 2018 – chronic LBP:** TENS only more effective than control treatment in improving function with		− − − **0** + + + There is no good evidence that TENS

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	low back pain with or without sciatica.		MD −2.75 (95% CI −11.63, 6.13) [2 studies, n=129?] From Wu 2018 – chronic LBP: Effect of TENS similar to control treatments for pain relief standardized difference in means [SDM] = -0.20 (95% CI -0.58 to 0.18; P = 0.293) [12 RCTs, n=700]	follow-up of < 6 weeks SDM = -1.24 (95% CI -1.83 to -0.65; P < 0.001) but no more effective in the longer term [12 RCTs, n=700]		machines will help people with low back pain or sciatica.
Exercise and physical activity						
NICE LBP guideline/ Hayden et al 2019 (IPD meta-analysis; Owen et al. 2019 network meta-analysis; Vanti et al, 2017 meta-analysis; Geneen et al. 2017 Cochrane umbrella review any type of chronic pain; Wielandt et al. 2017 Meta-analysis Yoga; O'Keeffe et al. meta-analysis 2017 Group vs individual. Jordan et al. Cochrane review 2010 (adherence to exercise); Slade et al, 2014 (systematic review – beliefs exercise)	**8 Consider a group exercise programme (biomechanical, aerobic, mind–body or a combination of approaches) within the NHS for people with a specific episode or flare-up of low back pain with or without sciatica. Take people's specific needs, preferences and capabilities into account when choosing the type of exercise.**	**From NICE**: People who take part in exercise more often experience 9mprovement in function within 4 months: 23.8% versus 50.2% (difference 26.4% (95% CI: 8.1 to 54.6) From Owen et al. 2019 There is low quality evidence that Pilates, stabilisation/motor control, resistance training and aerobic exercise training are the most effective treatments, pending on outcome of interest **From Slade et al** (15 qualitative studies): People are likely to prefer and participate in exercise and activities that are designed with consideration of their	**From Hayden et al**: Compared with no treatment/usual care, exercise therapy on average reduced pain (0-100) by −10.7 (95% CI −14.1 to −7.4) points. This is compatible with a clinically important difference of 20% **From Wielandt** et al:). Yoga was slightly better for pain (0-100) at 3-4 months (mean difference -4.6 (95% CI -7.0 to -2.1), six months (MD -7.8, 95% CI -13.4 to -2.35), and 12 months (MD -5.4, 95% CI -14.5 to -3.7). **From Vanti** et al. 2017: Pain, disability, and fear-avoidance similarly improve by walking or exercise.	**From Hayden** et al: Compared with no treatment/usual care, exercise therapy reduced functional limitations (0-100) by 10.2 points (95% CI: −13.2 to −7.3) in the short-term (up to 3 months), compatible with a clinically important difference of 23%. **From Wielandt** et al. : Yoga produced small to moderate improvements in function at 3-4 months (standardized mean difference (SMD) -0.40, 95% confidence interval (CI) -0.66 to -0.14. **From O'Keeffe et al**: There were only small, clinically irrelevant differences in pain or	Data on adverse events was very limited, but there is no evidence of harm, when conducted appropriately, exercise should be safe (NICE). **From Geneen** et al. 2017: Only 25% of 18 reviews actively reported adverse events. Most adverse events were increased soreness or muscle pain, which reportedly subsided after a few weeks of the intervention. Only one review reported death separately to other adverse events: the intervention was protective against death, although the difference was small.	− − − 0 **+ +** + Most people who have back pain or sciatica will have less pain if they exercise. No one type of activity or exercise is better than another, so people should choose something they enjoy. At first, exercise may make pain worse, but this does not mean that the back is being damaged. It's best to start with a small amount of activity and build up. If a home-based exercise programme does not help, people who have back pain that

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		preferences, fitness levels, circumstances, and exercise experiences. **From Jordan et al.** (42 trials): High quality evidence is scarce, but supervised or individualised exercise therapy and supported self-management techniques may enhance exercise adherence.		function between group and individual exercise.		has lasted a long time may get more help if a physiotherapist or other health professional supports them. They may also find it easier to stick with their exercises with this support.

Sources	NICE recommendations	Overall response rate	Pain intensity	Function	Adverse events	**Interpretation of results (for decision aid)**
PART 2: Persistent/recurrent pain LBP – long term care / referral options						
Manual therapies: massage, mobilisation or manipulation						
NICE guideline for LBP; Rubinstein et al. 2019 (Meta-analysis chronic LBP); Coulter et al 2017 (meta-analysis acute LBP)	**13 Consider manual therapy (spinal manipulation, mobilisation or massage) for managing low back pain with or without sciatica, but only as part of a treatment package including exercise, with or without psychological therapy.**	-	**From Rubinstein**: Manipulation has similar short-term effects (1 month) on pain (0-100) as other recommended therapies for LBP: mean difference -3.17 (95% CI -7.85 to 1.51): no difference **From Coulter:** Effect may be slightly higher for people with acute LBP: average reduction in pain (0-100) compared with control	**From Rubinstein** Manipulation shows a slightly larger short term (1 month) reduction in functional limitations: SMD -0.25 (95% CI -0.41 to -0.09) when compared to other recommended strategies. When compared with non-recommended strategies, manipulation shows small to moderate effects on function: SMD -0.41 (95% CI -0.67 to -0.15).	**From NICE:** Adverse events are not always reported in studies, but if reported are minor and transient (muscle soreness for a few days following treatment). Serious harm is very rare, and difficult to link to spinal manipulation, but cases have sometimes been reported (mostly for manipulation of the neck).	– – – 0 **+** + + Having manual therapies on their own is not likely to help people with back pain. But some people may get help from combining exercise with manual therapies.

			(closest to 1 month): -9.95 [95% CI, -15.6 to -4.3] **From Rubinstein:** Compared with non-recommended therapies, manipulation shows small short term effects on pain: mean difference -7.48 (95% CI -11.50 to -3.47).	(similar for acute and chronic LBP)		
Return to work programmes						
NICE guideline, Wynne-Jones et al 2018 (recent RCT); Van Vilsteren et al. Cochrane Review	**Promote and facilitate return to work or normal activities of daily living for people with low back pain with or without sciatica.**	**From Van Visteren**: Workplace interventions reduced time to lasting RTW among workers with musculoskeletal disorders more than usual care (HR 1.77, 95% CI 1.37 to 2.29): 80% faster.	**From Van Visteren**: In studies of workplace interventions, pain on average improved: standardised mean difference -0.26 (95% CI -0.47 to -0.06): small effect	**From Van Visteren**: In studies of workplace interventions, function on average improved: standardised mean difference -0.33, 95% CI -0.58 to -0.08): small-moderate effect. **From Wynne-Jones**: Patients referred to a vocational advice service in primary care had fewer days work absence compared with usual care: mean difference 9.3 (sd 21·7) versus 14·4 (sd 27·7) days. They also improved at both 4 and 12 months in terms of return-to-work self-efficacy and performance at work.	From NICE: No evidence of harm	– – – 0 **+** + + Workplace interventions may reduce time to return to work in most people, but effects on pain and function will be small. Advice and support regarding working with pain may lead to fewer days work absence in most people (on average 5 days)
Acupuncture						
Li 2020 [systematic review]	Do not offer acupuncture for managing low back pain with or without sciatica.	(1) immediate term (<1week); (2) short term (1week–3 months); (3) intermediate term (3–12	**From Li 2020** Short term (1 week–3 months): acupuncture improved more than sham SMD -0.47 (95% CI	**From Li 2020** Short term (1week–3 months): vs sham SMD 0.06 (95% CI -0.07 to		– – – **0** + + + There is no good evidence that

		months); and (4) long term (>1 year).	-0.77 to -0.17) [5 studies, n=1300]; acupuncture improved more than usual care SMD -1.33 (-2.12 to -0.53) [6 studies, n=1191]; acupuncture+UC improved more than UC SMD -0.51 (-0.91 to -0.11) [2 studies, n=99] Intermediate term (3-12 months): acupuncture improved more than sham SMD -0.17 (95% CI -0.28 to -0.05) [4 studies, n=1178]; acupuncture improved more than usual care SMD -0.51 (95% CI -0.88 to -0.14) [3 studies, n=1060]; acupuncture+UC improved more than UC SMD -0.55 (95%CI -0.93 to -0.16) [4 studies, n=329] Long term (>1 year): acupuncture improved more than usual care SMD -0.26 (95%CI -0.60 to 0.07) [1 study, n=162]	0.19) [3 studies, n=1432, I^2=28%] Intermediate term (3-12 months): vs sham SMD -0.02 (95% CI -0.24 to 0.20) [4 studies, n=1520, I^2=71%]		acupuncture will help people with low back pain or sciatica. – – – 0 **+ +** + Compared to no additional treatment, most people experience improvement in pain after treatment with acupuncture
Behavioural/Psychological interventions						
NICE LBP guideline/ Henschke 2010 (Cochrane review)/Williams 2012 (Cochrane review)	**19. Consider psychological therapies using a cognitive behavioural approach for managing low back pain with or without sciatica but only as part of a treatment package including exercise, with or without manual therapy (spinal manipulation, mobilisation**	No response rates reported	**From NICE** Cognitive behavioural approaches on average reduce pain: (0 to 10): -0.66 (95%CI -1.01 to -0.31) compared with usual care/waiting list in short term (≤4 months) (6 studies, n=458): moderate effect. **From Williams 2012**:	**From NICE** For cognitive behavioural approaches, mean function (RMDQ; 0 to 24) was -2.95 (95% CI -4.26 to -1.65) lower than for usual care/waiting list in short term (≤4 months) (2 studies, n=240) **From Williams 2012**:	No adverse events rates reported	– – – **0 +** + + Low mood and worry can make pain worse and make it harder to manage with pain. Some people with back pain may get help from talking therapies, such as

	or soft tissue techniques such as massage).		CBT more effective than usual care immediately after treatment SMD -0.21 (95% CI -0.37 to -0.05) (16 studies, n=1148): small effect. Effect not significant at longer-term follow up (6 studies, n=450) For behavioural therapy, mean pain score (McGill; 0 to 78) was -3.42 (-8.08 to 1.24) lower than for usual care/waiting list (mean pain 21.55) in short term (<4 months) (2 studies, n=122): small effect **From Henschke SR**: Behavioural treatment more effective than usual care for short-term pain relief (MD -5.18; 95%CI -9.79 to -0.57), but no differences in the intermediate- to long-term. **From Williams 2012:** No sig. difference for behavioural therapy versus usual care immediately after treatment (5 studies, n=484) or at follow up (2 studies, n=182) For mindfulness, mean pain severity (McGill; 0-78) was -5.55 (95% CI -11.7 to -0.08) lower than for usual care/waiting list (mean	CBT more effective than usual care immediately after treatment SMD -0.26 (95% CI -0.47 to -0.04) (15 studies, n=1105). Effect not sig. at follow up (7 studies, n=635) For behavioural therapy, mean function (Modified activity form score) was -1.41 (-2.66 to -0.16) lower than for usual care/waiting list (mean function 6.25) in longer term study (>4 months) (1 study, n=103) **From Williams 2012:** No sig. difference for behavioural therapy versus usual care immediately after treatment (5 studies, n=504) or at follow up (3 studies, n=336) For mindfulness, mean function (RMDQ; 0 to 24) was -1.20 (95% CI		cognitive behavioural therapy, in the first 4 months after they start. This should only be used as part of a treatment package that includes exercise, either with or without manual therapy.

			pain 20.0) in short term (≤4 months) (2 studies, n=124): small effect For cognitive therapy, mean pain (VAS, 0-10) ≤4 months was -1.09 (95% CI -2.202 to 0.22) lower than for usual care/waiting list (mean pain -1) in short term (<=4 months) (1 study, n=63)	-4.55 to 2.15) in short term (<=4 months) (1 study, n=37) For cognitive therapy, mean function (RMDQ, 0-24) was -1.9 (95% CI -3.84 to 0.04) lower than for usual care/waiting list (mean function -1.6) in longer term (>4 months) (1 study, n=63)		
Multidisciplinary psychosocial/behavioural treatment (MBR)						
NICE guideline Kamper 2014 (Cochrane review)	**30. Consider a combined physical and psychological programme, incorporating a cognitive behavioural approach (preferably in a group context that takes into account a person's specific needs and capabilities), for people with persistent low back pain or sciatica:** **- when they have significant psychosocial obstacles to recovery (for example, avoiding normal activities based on inappropriate beliefs about their condition) or** **- when previous treatments have not been effective**	Use risk stratification to identify people who might benefit from a combined physical and psychological approach	From Kamper Mean back pain in MBR groups was lower than for usual care at all time points (SMD -0.21, 95% CI -0.37 to -0.04 for long term follow up (median 12 months); -0.60, 95% CI -0.85 to -0.34 for medium term & -0.55, 95% CI -0.83 to -0.28 for short term. Range across all time points equated to approx. 0.5 to 1.4 units on a pain NRS (0 to 10). [7 studies, n=821]	From Kamper Mean disability in MBR groups was lower than for usual care at all time points (SMD -0.23, 95% CI -0.40 to -0.06 for long term follow up (median 12 months); -0.43, 95% CI -0.66 to -0.19 for medium term & -0.41, 95% CI -0.62 to -0.19 for short term. Range across all time points equated to approx. 1.4 to 2.5 points on RMDQ (0 to 24). [6 studies, n=722]	From Kamper Insufficient evidence to assess whether MBR interventions were associated with more adverse events than usual care.	– – – 0 **+ +** + Some patients, particularly those with psychosocial obstacles to recovery, will find multidisciplinary psychosocial treatment beneficial
Spinal injections						
NICE guideline	**32. Do not offer spinal injections for managing low back pain**	**From NICE** "There was minimal evidence of benefit from injections, and reason to believe that there was a risk of	**From NICE** Image-guided facet joint injections: Steroid vs saline -	**From NICE** Image-guided facet joint injections: Steroid vs saline -	Lack of evidence on adverse events	– – **– 0 +** + +

		harm, even if rare. The GDG consequently agreed that it was appropriate to recommend against the use of spinal injections for people with low back pain " [Evidence from small studies with high risk of bias]	mean pain (VAS, 0-10) lower for steroid than saline at ≤ 4 months (RD -0.2, 95% CI -1.14 to 0.74 [1 study, n=96, control mean 4.7]) & > 4 months (RD -1.0, 95% CI -1.94 to -0.06 [1 study, n=95, control mean 5.0]). Other guided injections: Steroid vs saline - mean pain (VAS, 0-10) lower for steroid than saline at ≤ 4 months (RD -4.19, 95% CI -4.55 to -3.82 [3 studies, n=125, control mean 6.81]) & > 4 months (RD -3.38, 95% CI -3.76 to -3.01 [3 studies, n=125, control mean 6.81]) Prolotherapy: Sclerosant + anaesthetic vs saline - mean pain (VAS, 0-7.5) lower for steroid than saline at ≤ 4 months (RD -1.16, 95% CI -1.81 to -0.51 [1 study, n=81, control mean 2.93]) & > 4 months (RD -1.58, 95% CI -2.26 to -0.9 [1 study, n=81, control mean 3.08])	mean function (MSIP, 0-100) lower for steroid than saline at ≤ 4 months (RD -0.5, 95% CI -2.72 to 1.72 [1 study, n=96, control mean 4.7]) & > 4 months (RD -3.0, 95% CI -6.16 to 0.16 [1 study, n=95, control mean 5.0]). Other guided injections: Steroid vs saline - mean function (ODI, 0-100) lower for steroid than saline at ≤ 4 months (RD -21.4, 95% CI -24.09 to -18.71) [3 studies, n=125, control mean 42.18]) & > 4 months (RD -12.02, 95% CI -14.79 to -9.24 [4 studies, n=223, control mean 46.63]) Prolotherapy: Sclerosant + anaesthetic vs saline - mean function (RMDQ, 0-33) lower for steroid than saline at ≤ 4 months (RD -3.79, 95% CI -6.28 to -1.3 [1 study, n=81, control mean 8.49]) & > 4 months (RD -4.86, 95% CI -7.44 to -2.28 [1 study, n=81, control mean 8.29])		There is no good evidence that spinal injections will help people with low back pain without sciatica. There is a small risk of complications with this treatment.
Epidural injections						

NICE LBP guideline Chou 2015 (systematic review)	**36. Consider epidural injections of local anaesthetic and steroid in people with acute and severe sciatica.**	**From NICE** Anaesthetic versus sham/placebo >50% reduction in pain -115 per 1000 (95% CI -172 to 140) for anaesthetic vs sham/placebo (RR 0.39 (0.09 to 1.74) [1 study, n=64, control risk 189 per 1000]	**From Chou 2015** Epidural corticosteroids associated with greater immediate-term reduction in pain (WMD 0 to 100) of −7.55 [95% CI, −11.4 to −3.74]. No longer term effect (beyond 3 months). [30 studies included]	**From Chou 2015** Epidural corticosteroids associated with greater immediate-term reduction in function (SMD after exclusion of outlier trial) of −0.33 [CI, −0.56 to −0.09]. No longer term effect [30 studies included]	**From Chou 2015** – serious harms were rare, but reporting was suboptimal	– – **– 0 +** + + Some people with sciatica may get help from epidural steroid injections. There is a small risk of complications with this treatment.
Radiofrequency (RF) denervation						
NICE guideline Maas 2015 (Cochrane review)	**33. Consider referral for assessment for radiofrequency denervation for people with chronic low back pain when:** - **non-surgical treatment has not worked for them and** - **the main source of pain is thought to come from structures supplied by the medial branch nerve and** - **they have moderate or severe levels of localised back pain (rated as 5 or more on a visual analogue scale, or equivalent) at the time of referral.** **34. Only perform radiofrequency denervation in people with chronic low back pain after a positive response to a diagnostic medial branch block.**	**From NICE** >50% reduction in global perceived effect ≤ 4 months more for RF denervation than placebo (289 per 1000. 95% CI 58 to 636; RR 1.74, 95% CI 1.15 to 2.63) [2 studies, n=111, control 390 per 1000] >50% in back pain (VAS) at <+4 months fewer in RF denervation group than placebo (-17 per 1000, 95%CI -167 to 260; RR 0.95, 95% CI 0.51 to 1.76) [1 study, n=81, control 341 per 1000]	**From Maas 2015** For facet joint denervation, mean pain (0 to 10) was lower than placebo at 1 month (-1.5, 95% CI -2.3 to -0.7) [3 studies, n=160, control mean range 4.3 to 6]; mean pain was lower than controls at 1 to 6 months (-0.7, 95% CI -2.3 to -0.8) [3 studies, n=182, control mean range 4.4 to 4.9]; mean pain was lower than controls at 6 months (-0.7, 95% CI -1.5 to 0.1) [3 studies, n=140, control mean range 3.1 to 7] For disc pain no effects for RF denervation versus placebo (short/intermediate term), and small effects over the long term for pain relief (MD -1.63, 95% CI -2.58 to -0.68)	**From Maas 2015** Facet joint – mean function (ODI 0 to 100) lower than for placebo at 1 month (-5.5, 95% CI -8.7 to -2.4, control mean 30.5); mean function lower than placebo at >6 months (-3.7, 95% CI -6.9 to -0.5, control mean 28.9) [1 study, n=60]. For disc pain small effects for RF denervation over the long term for improved function (ODI 0 to 100) (MD -6.75, 95% CI -13.42 to -0.09)	**From NICE** "Evidence from a single study reporting adverse events at less than 4 months follow up demonstrated an increase in adverse effects for radiofrequency denervation in terms of the number of patients with moderate or severe treatment related pain (low quality, n=79)"	– – **– 0 +** + + A very few people with low back pain may get help from a procedure to block pain nerves. This procedure is called radiofrequency denervation. There is a small risk of complications with this treatment.

			For SI joint pain no shrt-term differences from placebo for pain (MD -2.12, 95% CI -5.45 to 1.21); 1 study shows a small intermediate-term effect on pain	For SI joint pain no differences from placebo for function (MD -14.06, 95% CI -30.42 to 2.30) and one study shows a small effect on pain over the intermediate term		
Surgery: total disc replacement (TDR)						
NICE guideline Jacobs 2012 (Cochrane review)	**39. Do not offer disc replacement in people with low back pain.**	**From Jacobs 2012** TDR vs fusion % improved function (Ostwestry) in TDR group 583/837 (70%) versus 233/407 (57%) in fusion group (OR 1.45, 955 CI 1.06 to 1.98) [5 studies, n=1244]	**From NICE** TDR vs multidisciplinary biopsychosocial rehabilitation (MBR) Mean pain severity (VAS 0 to 10) at 1 year was lower for TDR than MBR (MD -1.76 95% CI -2.61 to -0.91, control mean 5.32) [1 study, n=1720] Mean pain severity at 2 years was lower for TDR than MBR (MD -1.43 95% CI -2.29 to -0.57, control mean 4.97) [1 study, n=172]	**From NICE** TDR vs multidisciplinary biopsychosocial rehabilitation (MBR) Mean function (ODI) at 3 months was lower for TDR than MBR (MD -9.1 95% CI -13.17 to -5.03, control mean 30.6) [1 study, n=172]. Mean function (ODI) at 1 year was lower for TDR than MBR (MD -8.9 95% CI -13.88 to -3.92, control mean 29.2) [1 study, n=172. mean function (ODI) > at 2 years was lower for TDR than MBR (MD -6.9 95% CI -11.57 to -2.23, control mean 26.7) [1 study, n=172]	**From NICE** From 1 study (n=577) more adverse events for TDR than fusion at <4 months **From Jacobs 2012** **TDR vs fusion** Thromboembolic complications (2 studies). 2 venous thromboses in the disc replacement group and none in the fusion group. 1 cardiovascular event in the disc replacement group and none in the fusion group. Blood loss (5 studies): Mean difference -37 ml (-185 to 111) favouring disc replacement, not statistically different. Reoperations (5 studies): OR 0.80 (0.51 to 1.24) There were 63 of 810 (7.8%) re-operations	– – **– 0 +** + + Some people with severe, persistent back pain may experience some pain relief from disc replacement, but improvement in function is less likely. Some people will experience harm from this procedure and up to 10% may need re-operation. Disc replacement should not be offered.

					in the total disc replacement group and 35 of 384 (9.1%) in the fusion group. Neurological complications (1 study): no statistical difference. Adjacent segment degeneration (1 study): six of 72 cases of fusion and only one of 80 cases of total disc replacement with adjacent segment problems. Facet joint degeneration (1 study): no statistical difference.	
Spinal fusion						
NICE guideline Wang 2015 (systematic review)	**40. Do not offer spinal fusion for people with low back pain unless as part of a randomised controlled trial.**		**From NICE** Fusion vs usual care Mean pain (VAS,0-10) at 2 years was lower for fusion than usual care (MD -1.51 95% CI -2.09 to -0.93, control mean 5.83) [1 RCT, n=264]	**From NICE** Fusion vs usual care Mean function (ODI,0-100) at 2 years was lower for fusion than usual care (MD -9.9 95% CI -14.59 to -5.21, control mean 45.6) [1 RCT, n=264] **From Wang 2015** Fusion vs nonsurgical treatments Difference in ODI between fusion and nonsurgical treatment was not statistically	**From NICE** Fusion vs usual care Complications at 2 years OR 5 (95% CI 2.45 to 10.19) Reoperations at 2 years OR 4.12 (95% CI 1.3 to 13.1) [1 RCT, n=283] **From Wang 2015** Complication rate was sig. different between fusion (85/466; 18%) and nonsurgical groups (0/321; 0%) (OR	– – 0 + + Some people with severe, persistent back pain may experience some pain relief from spinal fusion, but function is unlikely to improve or may even get worse. There is a considerable risk of complications.

				significant (MD, 1.94; 95% CI, -6.02 to 2.14) [6 studies, n=889]	22.11 95% CI 5.99 to 81.6) [5 studies, n=787]	Your health professional shoulder not offer spinal fusion (unless part of a clinical trial).
Discectomy						
NICE guideline Machado 2016 (systematic review of cohort studies)	**41. Consider spinal decompression for people with sciatica when non-surgical treatment has not improved pain or function and their radiological findings are consistent with sciatic symptoms.**	**From NICE** Discectomy vs usual care Complete or nearly complete disappearance of symptoms at 8 weeks in 303 more per 1000 (95%CI 153 to 499; RR 1.97, 95%CI 1.49 to 2.6) for discectomy than usual care [1 study, n=281] Complete or nearly complete disappearance of symptoms at 26 weeks in 251 more per 1000 (95%CI 139 to 376; RR 1.38, 95%CI 1.21 to 1.57) for discectomy than usual care [1 study, n=281]	**From NICE** Discectomy vs usual care, mean leg pain (VAS,0-10) at ≤4 months was lower for discectomy than usual care (MD -1.39 95%CI -2.39 to -0.39, control mean 2.195) [2 studies, n=333], at 1 year (MD -0.57 95%CI -0.87 to -0.28, control mean 1.175) [2 studies, n=333] and 2 years (MD -0.9 95%CI -1.95 to 0.15, control mean 1.5) [1 study, n=50] Mean back pain at <=4months was lower for discectomy than usual care (MD -1.13 95%CI -1.18 to -1.08, control mean 2.385) [2 studies, n=333], at 4 months to 1 year (MD -0.23 95%CI -0.28 to -0.18, control mean 1.74) [2 studies, n=332] and at 2 years (MD -1.0 95%CI -2.28 to 0.28, control mean 2.1) [1 study, n=50] **Machado 2016**	**From NICE** Discectomy vs usual care Mean function (ODI change score at <=4 months was lower for discectomy than usual care (MD -5.1 95%CI -8.91 to -1.3, control mean change -17.65) [2 studies, n=461], at 4 months to 1 year (MD -2.58 95%CI -6.47 to 1.3, control mean change -19.2) [2 studies, n=467] and at 2 years (MD -3.38 95%CI -7.33 to 0.58, control mean change -19.85) [2 studies, n=423 **From Machado 2016** mean disability at baseline was 55.1 (95% CI 52.3–58.0) and this decreased to 15.5 (95% CI 13.3–17.6) at 3 months, and to 13.1 (95% CI 10.6–15.5) at 5 years [39 cohort studies, n=13,883]	Adverse event data not reported. Similar risks to other types of surgery?	– – **– 0 +** + + People with severe, persistent sciatica who have not responded to other treatments may experience pain relief from discectomy, but their function is less likely to improve. Spinal decompression may be an option in some people with sciatica.

			Mean leg pain at baseline was 75.2 (95% CI 68.1–82.4) which reduced to 15.3 (95% CI 8.5–22.1) at 3 months. Patients were never fully recovered in the long-term and pain increased to 21.0 (95% CI 12.5–29.5) at 5 years [39 cohort studies, n=13,883]			

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