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Appendices

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The clinical effectiveness and cost-effectiveness of management strategies for sciatica: systematic review and economic model

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Appendix 1

Search strategies

MEDLINE (OVID) 1950 to week 1 June 2008

Searched on 16 June 2008. Search updated on 4 December 2009.

1. Sciatica/
2. (ischialg$or sciatic$).ti,ab.
3. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
4. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab
5. Intervertebral Disk Displacement/
6. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
7. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
8. ((refer$or radiat$) adj5 (back or leg or foot)).ti,ab.
9. or/1-8
10. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab.
11. Bed rest/
12. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
13. Physical Therapy Modalities/
14. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or physio$or physical or exercise) adj5 (therap$or treatm$)).ti,ab.
15. Transcutaneous Electric Nerve Stimulation/
16. (transcutaneous electric nerve stimulation or TENS).ti,ab.
17. Complementary Therapies/
18. Exp Musculoskeletal Manipulations/
19. Exp Acupuncture Therapy/
20. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
21. Homeopathy/
22. homeopathy.ti,ab.
23. Herbal Medicine/
24. herbal medicine.ti,ab.
25. Orthotic Devices/
26. (braces or slings or splints or corset).ti,ab.
27. Traction/
28. traction.ti,ab.
29. Drug Therapy/
30. Exp Analgesics/
31. Anti-Inflammatory Agents, Non-Steroidal/

32. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.
33. (paracetamol or acetaminophen).ti,ab.
34. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
35. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
36. Epidural Analgesia/
37. Epidural Injections/
38. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.
39. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
40. Orthopedic Procedures/
41. Intervertebral Disk Chemolysis/
42. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
43. Vertebroplasty/
44. Diskectomy/
45. Neurosurgical Procedures/
46. Laminectomy/
47. Rhizotomy/
48. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy).ti,ab.
49. Surgical Decompression/
50. surgical decompression.ti,ab.
51. or/11-50
52. 9 and 51
53. limit 52 to humans

OLDMEDLINE (OVID) 1947–67

Searched with updated searches on 4 December 2009.

1. Sciatica/
2. (ischialg$or sciatic$).ti,ab.
3. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
4. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab
5. Intervertebral Disk Displacement/
6. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or

prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
7. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
8. ((refer$or radiat$) adj5 (back or leg or foot)).ti,ab.
9. or/1-8
10. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab.
11. Bed rest/
12. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
13. Physical Therapy Modalities/
14. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or physio$or physical or exercise) adj5 (therap$or treatm$)).ti,ab.
15. Transcutaneous Electric Nerve Stimulation/
16. (transcutaneous electric nerve stimulation or TENS).ti,ab.
17. Complementary Therapies/
18. Exp Musculoskeletal Manipulations/
19. Exp Acupuncture Therapy/
20. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
21. Homeopathy/
22. homeopathy.ti,ab.
23. Herbal Medicine/
24. herbal medicine.ti,ab.
25. Orthotic Devices/
26. (braces or slings or splints or corset).ti,ab.
27. Traction/
28. traction.ti,ab.
29. Drug Therapy/
30. Exp Analgesics/
31. Anti-Inflammatory Agents, Non-Steroidal/
32. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.
33. (paracetamol or acetaminophen).ti,ab.
34. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
35. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
36. Epidural Analgesia/
37. Epidural Injections/
38. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.

39. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
40. Orthopedic Procedures/
41. Intervertebral Disk Chemolysis/
42. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
43. Vertebroplasty/
44. Diskectomy/
45. Neurosurgical Procedures/
46. Laminectomy/
47. Rhizotomy/
48. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy).ti,ab.
49. Surgical Decompression/
50. surgical decompression.ti,ab.
51. or/11-50
52. 9 and 51
53. limit 52 to humans

MEDLINE(R) In-Process & Other Non-Indexed Citations

Searched on 12 June 2008. Search updated on 4 December 2009.

1. (ischialg$or sciatic$).ti,ab.
2. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
3. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab
4. ((lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk or intervertebral disk or intervertebral disc) adj5 (herni$or slip$or prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
5. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
6. ((back or leg or foot) adj5 (refer$or radiat$)).ti,ab.
7. or/1-6
8. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab
9. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
10. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or physio$or physical or exercise) adj5 (therap$or treatm$)).ti,ab.
11. (transcutaneous electric nerve stimulation or TENS).ti,ab.
12. Complementary Therapies/
13. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
14. homeopathy.ti,ab.
15. herbal medicine.ti,ab.
16. braces or slings or corset.ti,ab.
17. traction.ti,ab.
18. Exp Analgesics/
19. Anti-Inflammatory Agents, Non-Steroidal/
20. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.

21. (paracetamol or acetaminophen).ti,ab.
22. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
23. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
24. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.
25. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
26. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
27. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy).ti,ab.
28. surgical decompression.ti,ab.
29. or/8-28
30. 7 and 29

EMBASE 1980 to week 23 June 2008

Searched on 12 June 2008. Search updated on 4 December 2009.

1. Ischialgia/
2. (ischialgia$or sciatic$).ti,ab.
3. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
4. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab
5. Exp Intervertebral Disk Hernia/
6. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
7. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
8. ((back or leg or foot) adj5 (refer$or radiat$)).ti,ab.
9. or/1-8
10. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab
11. Conservative Treatment/
12. Bed Rest/
13. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
14. Exp Traction Therapy/
15. traction.ti,ab.
16. Physical Medicine/
17. Physiotherapy/

18. Microwave Therapy/
19. Ultrasound Therapy/
20. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or microwave$or physio$or physical or exercise or daitherm$) adj5 (therap$or treatm$)).ti,ab.
21. Transcutaneous Nerve Stimulation/
22. (transcutaneous electric nerve stimulation or TENS).ti,ab.
23. Alternative Medicine/
24. Exp Manipulative Medicine/
25. Exp Acupuncture/
26. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
27. Homeopathy/
28. homeopathy.ti,ab.
29. Traditional Medicine/
30. Herbal Medicine/
31. herbal medicine.ti,ab.
32. Orthopedic Equipment/
33. Orthotics/
34. Corset/
35. (braces or slings or corset).ti,ab.
36. Analgesia/
37. Exp Analgesic Agent/
38. Nonsteroid Antiinflammatory Agent/
39. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.
40. (paracetamol or acetaminophen).ti,ab.
41. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
42. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
43. Epidural Drug Administration/
44. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.
45. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
46. Orthopedic Surgery/
47. Chemonucleolysis/
48. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
49. Percutaneous Vertebroplasty/
50. Spinal Cord Surgery/
51. Intervertebral Diskectomy/
52. Laminectomy/

53. Rhizotomy/
54. Laminoplasty/
55. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy or laminoplasty).ti,ab.
56. Nerve Decompression/
57. Spinal Cord Decompression/
58. ((nerve or spinal cord) adj5 decompression).ti,ab.
59. or/10-58
60. 9 and 59
61. limit 60 to humans

EMBASE 1974–9

Searched on 12 June 2008.

1. Ischialgia/
2. (ischialgia$or sciatic$).ti,ab.
3. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
4. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab
5. Exp Intervertebral Disk Hernia/
6. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
7. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
8. ((back or leg or foot) adj5 (refer$or radiat$)).ti,ab.
9. or/1-8
10. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab
11. Conservative Treatment/
12. Bed Rest/
13. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
14. Exp Traction Therapy/
15. traction.ti,ab.
16. Physical Medicine/
17. Physiotherapy/
18. Microwave Therapy/
19. Ultrasound Therapy/
20. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or microwave$or physio$or physical or exercise or daitherm$) adj5 (therap$or treatm$)).ti,ab.
21. Transcutaneous Nerve Stimulation/
22. (transcutaneous electric nerve stimulation or TENS).ti,ab.
23. Alternative Medicine/
24. Exp Manipulative Medicine/
25. Exp Acupuncture/
26. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
27. Homeopathy/
28. homeopathy.ti,ab.

29. Exp Traditional Medicine/
30. Orthotics/
31. Corset/
32. (braces or slings or corset).ti,ab.
33. Analgesia/
34. Exp Analgesic Agent/
35. Nonsteroid Antiinflammatory Agent/
36. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.
37. (paracetamol or acetaminophen).ti,ab.
38. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
39. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
40. Epidural Drug Administration/
41. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.
42. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
43. Orthopedic Surgery/
44. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
45. Exp Spine Surgery/
46. Exp Spinal Cord Surgery/
47. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy or laminoplasty).ti,ab.
48. ((nerve or spinal cord) adj5 decompression).ti,ab.
49. or/10-48
50. 9 and 49

EMBASE 1947–73

Searched on 12 June 2008. Search updated on 4 December 2009 for EMBASE Classic 1947–79.

1. Ischialgia/
2. (ischialgia$or sciatic$).ti,ab.
3. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
4. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab
5. Exp Intervertebral Disk Hernia/
6. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or

prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
7. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
8. ((back or leg or foot) adj5 (refer$or radiat$)).ti,ab.
9. or/1-8
10. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab
11. Conservative Treatment/
12. Bed Rest/
13. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
14. Exp Traction Therapy/
15. traction.ti,ab.
16. Physical Medicine/
17. Physiotherapy/
18. Microwave Therapy/
19. Ultrasound Therapy/
20. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or microwave$or physio$or physical or exercise or daitherm$) adj5 (therap$or treatm$)).ti,ab.
21. Electrostimulation/
22. (transcutaneous electric nerve stimulation or electro?stimulation or TENS).ti,ab.
23. Alternative Medicine/
24. Exp Manipulative Medicine/
25. Exp Acupuncture/
26. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
27. Homeopathy/
28. homeopathy.ti,ab.
29. Traditional Medicine/
30. Herbal Medicine/
31. herbal medicine.ti,ab.
32. Orthopedic Equipment/
33. Orthotics/
34. Corset/
35. (braces or slings or corset).ti,ab.
36. Analgesia/
37. Exp Analgesic Agent/
38. Nonsteroid Antiinflammatory Agent/
39. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.
40. (paracetamol or acetaminophen).ti,ab.
41. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
42. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or

phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
43. Epidural Drug Administration/
44. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.
45. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
46. Orthopedic Surgery/
47. Chemonucleolysis/
48. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
49. Percutaneous Vertebroplasty/
50. Exp Spinal Cord Surgery/
51. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy or laminoplasty).ti,ab.
52. Nerve Decompression/
53. Spinal Cord Decompression/
54. ((nerve or spinal cord) adj5 decompression).ti,ab.
55. or/10-54
56. 9 and 55
57. limit 57 to humans

Cumulative Index to Nursing and Allied Health Literature 1982 to week 2 June 2008

Searched on 15 June 2008.

1. Sciatica/
2. (ischialg$or sciatic$).ti,ab.
3. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
4. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab
5. Intervertebral Disk Displacement/
6. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
7. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
8. ((back or leg or foot) adj5 (refer$or radiat$)).ti,ab.
9. or/1-8
10. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab.
11. Bed Rest/
12. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
13. Physical Therapy/
14. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or physio$or physical or exercise or message) adj5 (therap$or treatm$)).ti,ab.
15. Transcutaneous Electric Nerve Stimulation/
16. (transcutaneous electric nerve stimulation or TENS).ti,ab.
17. Alternative Therapies/

18. Exp Manual Therapy/
19. Exp Acupuncture/
20. Homeopathy/
21. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
22. Exp Medicine, Herbal/
23. herbal medicine.ti,ab.
24. Exp Orthoses/
25. (braces or slings or splints or corset).ti,ab.
26. Drug Therapy/
27. Exp Analgesics/
28. Anti-Inflammatory Agents, Non-Steroidal/
29. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.
30. (paracetamol or acetaminophen).ti,ab.
31. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
32. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
33. Epidural Analgesia/
34. Epidural Injections/
35. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.
36. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
37. Intervertebral Disk Chemolysis/
38. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
39. Orthopedic Surgery/
40. Traction/
41. traction.ti,ab.
42. Diskectomy/
43. Neurosurgery/
44. Laminectomy/
45. Rhizotomy/
46. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy).ti,ab.
47. Surgical Decompression/
48. surgical decompression.ti,ab.
49. or/10-48
50. 9 and 49

Allied and Complimentary Medicine Database 1985 to June 2008

Searched on 12 June 2008. Search updated on 4 December 2009.

1. Sciatica/
2. (ischialg$or sciatic$).ti,ab.
3. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
4. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab
5. Intervertebral Disk Displacement/
6. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
7. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
8. ((back or leg or foot) adj5 (refer$or radiat$)).ti,ab.
9. or/1-8
10. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab.
11. Bed Rest/
12. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
13. Exp Physical Therapy Modalities/
14. Traction/
15. traction.ti,ab.
16. Transcutaneous Electric Nerve Stimulation/
17. (transcutaneous electric nerve stimulation or TENS).ti,ab.
18. ((Heat or hot or thermal or infra?red or ultrasound or ultrasonic or Short-Wave or physio$or physical or exercise) adj5 (therap$or treatm$)).ti,ab.
19. Complementary Therapies/
20. Exp Acupuncture Therapy/
21. Homeopathy/
22. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
23. Herbal Drugs/
24. (herbal medicin$or drug$).ti,ab.
25. Orthotic Devices/
26. (braces or slings or corset).ti,ab.
27. Drug Therapy/
28. Analgesics/
29. Anti-Inflammatory Agents, Non-Steroidal/
30. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.
31. (paracetamol or acetaminophen).ti,ab.
32. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.

33. Analgesics, Opioid/
34. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
35. Analgesia Epidural/
36. Drug Administration Routes/
37. Injections/
38. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.
39. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
40. Surgery Operative/
41. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
42. Laminectomy/
43. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy).ti,ab.
44. surgical decompression.ti,ab.
45. or/10-44
46. 9 and 45

British Nursing Index and Archive 1985 to June 2008

Searched on 12 June 2008. Search updated on 4 December 2009.

1. (ischialg$or sciatic$).ti,ab.
2. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
3. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
4. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
5. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
6. ((back or leg or foot) adj5 (refer$or radiat$)).ti,ab.
7. or/1-6
8. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab
9. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
10. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or physio$or physical or exercise) adj5 (therap$or treatm$)).ti,ab.
11. (transcutaneous electric nerve stimulation or TENS).ti,ab.
12. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
13. homeopathy.ti,ab.
14. herbal medicine.ti,ab.
15. braces or slings or corset.ti,ab.
16. traction.ti,ab.

17. (paracetamol or acetaminophen).ti,ab.
18. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$or NSAID$) adj5 (drug$or analges$)).ti,ab.
19. (paracetamol or acetaminophen).ti,ab.
20. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
21. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
22. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or Chymopapain)).ti,ab.
23. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
24. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
25. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy).ti,ab.
26. surgical decompression.ti,ab.
27. or/8-26
28. 7 and 27

Health Management Information Consortium May 2008

Searched on 12 June 2008. Search updated on 4 December 2009.

1. Sciatica/
2. (ischialg$or sciatic$).ti,ab.
3. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
4. ((back or leg or foot) adj5 (refer$or radiat$)).ti,ab.
5. or/1-4
6. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab.
7. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
8. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or physio$or physical or exercise) adj5 (therap$or treatm$)).ti,ab.
9. (transcutaneous electric nerve stimulation or TENS).ti,ab.
10. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
11. Homeopathy/
12. homeopathy.ti,ab.
13. herbal medicine.ti,ab.

14. Orthotic Devices/
15. (braces or slings or splints or corset).ti,ab.
16. Traction/
17. traction.ti,ab.
18. Drug Therapy/
19. Exp Analgesics/
20. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.
21. (paracetamol or acetaminophen).ti,ab.
22. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
23. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
24. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.
25. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
26. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
27. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy).ti,ab.
28. Exp Surgery/
29. or/6-28
30. 5 and 29

PsycINFO 1806 to week 2 June 2008

Searched on 12 June 2008. Search updated on 4 December 2009.

1. (ischialg$or sciatic$).ti,ab.
2. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
3. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab
4. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
5. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
6. ((back or leg or foot) adj5 (refer$or radiat$)).ti,ab.
7. or/1-6
8. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab.
9. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.

10. Exp Physical Treatment Methods/
11. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or physio$or physical or exercise) adj5 (therap$or treatm$)).ti,ab.
12. Electrical Stimulation/
13. (transcutaneous electric nerve stimulation or TENS).ti,ab.
14. Exp Alternative Medicine/
15. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional or herbal$) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
16. (braces or slings or splints or corset).ti,ab.
17. traction.ti,ab.
18. Drug Therapy/
19. Exp Analgesic Drugs/
20. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.
21. (paracetamol or acetaminophen).ti,ab.
22. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
23. Exp Opiates/
24. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
25. Drug Administration Methods/
26. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.
27. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
28. Surgery/
29. (surgery or surgical treatment).ti,ab.
30. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
31. Neurosurgery/
32. (neuro?surgery or neuro?surgical treatment).ti,ab.
33. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy).ti,ab.
34. surgical decompression.ti,ab.
35. or/8-34
36. 7 and 35

Inspec 1969 to week 22 2008

Searched on 9 June 2008. Search updated on 4 December 2009.

1. (ischialg$or sciatic$).ti,ab.

2. ((lumb$or sacra$or spin$) adj5 radicul$).ti,ab.
3. ((sciatic nerve or lumbar nerve or spinal nerve or sacral nerve) adj5 (irritation or inflammat$or pain or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab
4. ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) adj5 (hernia$or slip$or prolapse or degeneration or fusion or sclerosis or rupture or distortion or fracture or displacement)).ti,ab.
5. ((lumbosacral nerve root or lumbo-sacral nerve root or lumbar nerve root) adj5 (irritat$or inflammat$or pain$or neuropath$or dysfunction$or compressio$or injur$or traum$)).ti,ab.
6. ((back or leg or foot) adj5 (refer$or radiat$)).ti,ab.
7. or/1-6
8. (treatment$or therap$or manag$or surg$or modalit$or intervention$).ti,ab.
9. (bed rest$or activ$or exercise$or education$or instruction$or advice$).ti,ab.
10. ((heat or hot or thermal or infra?red or ultrasound or ultrasonic or short-wave or physio$or physical or exercise) adj5 (therap$or treatm$)).ti,ab.
11. (transcutaneous electric nerve stimulation or TENS).ti,ab.
12. ((spina$or chiropract$or osteopath$or physi$or homeopath$or acupunctur$or musculo?skeletal or myofunctional) adj5 (massage or manipulat$or therap$or treatment$)).ti,ab.
13. homeopathy.ti,ab.
14. Orthotic/
15. (braces or slings or splints or corset).ti,ab.
16. Traction/
17. traction.ti,ab.
18. Drugs/
19. ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or narcotic or opioid$or opiate$) adj5 (drug$or analges$)).ti,ab.
20. (paracetamol or acetaminophen).ti,ab.
21. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib).ti,ab.
22. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol).ti,ab.
23. ((intramuscular or intravenous or peri?neural$or epidura$or inject$) adj5 (cortico?steroid$or steroid$or ana?lgesic$or chymopapain)).ti,ab.
24. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone).ti,ab.
25. Exp Orthopedics/
26. ((disc or disk) adj5 (chemolysis or chemonucleolysis)).ti,ab.
27. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy).ti,ab.
28. surgical decompression.ti,ab.
29. or/8-28
30. 7 and 29

The Cochrane Library (all databases) week 2 June 2008

Searched on 15 June 2008. Search updated on 4 December 2009.

1. Sciatica/
2. (ischialg* or sciatic*)
3. ((lumb* or sacra* or spin*) near (radicul*))
4. ((sciatic nerve* or lumbar nerve* or spinal nerve* or sacral nerve*) near (irritation* or inflammation* or pain* or neuropath* or dysfunction* or compressio* or injur* or traum*))
5. Intervertebral Disk Displacement/
6. ((intervertebral disk) near (hernia* or slip* or displac*))
7. ((lumbar disc* or lumbar disk* or lumbosacral disc* or lumbosacral disk* or lumbo-sacral disc* or lumbo-sacral disk*) near (hernia* or slip* or prolapse* or degeneration* or fusion* or sclerosis* or rupture* or distortion* or fracture*))
8. ((lumbosacral nerve root* or lumbo-sacral nerve root* or lumbar nerve root*) near (irritat* or inflammat* or pain* or neuropath* or dysfunction* or compressio* or injur* or traum*))
9. ((refer* or radiat*) near (back or leg or foot))
10. (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9)
11. (treatment* or therap* or manag* or surg* or modalit*)
12. Bed Rest/
13. (bed rest* or active* or exercise* or education* or instruction* or advice*)
14. Physical Therapy Modalities/
15. Transcutaneous Electric Nerve Stimulation/
16. Complementary Therapies/
17. Musculoskeletal Manipulations/
18. Acupuncture/
19. Chiropractic/
20. Osteopathic Medicine/
21. Massage/
22. Traction/
23. Herbal Medicine/
24. Short-Wave Therapy/
25. Homeopathy/
26. Holistic Health/
27. ((physio* or physic* or exercis* or heat* or hot* or thermal* or infra?red* or ultrasound* or ultrasonic* or short-wave* or complement* or holistic* or spina* or chiropract* or osteopath* or homeopath* or acupunctur* or musculo?skeletal or myofunctional) near (massage* or manipulate* or therap* or treatment* or medicin*))
28. Orthotic Devices/
29. (braces or slings or splints or corset)
30. Drug Therapy/
31. Analgesia/
32. Non-Narcotic Analgesics/
33. (paracetamol or acetaminophen)
34. Non-Steroidal Anti-Inflammatory Agents/
35. ((non?steroidal anti?inflammatory or non?narcotic or opioid* or opiate*) near (drug* or analges*))
36. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or

acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib)
37. Opioid Analgesics/
38. Narcotics Analgesics/
39. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol)
40. Epidural Analgesia/
41. Epidural Injections/
42. ((intramuscular or intravenous or peri?neural or epidural* or inject*) near (cortico?steroid* or steroid* or ana?lgesic* or chymopapain))
43. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone)
44. Orthopedic Procedures/
45. Traction/
46. Intervertebral Disk Chemolysis/
47. ((disc or disk) near (chemolysis or chemonucleolysis))
48. Vertebroplasty/
49. Diskectomy/
50. Neurosurgical Procedures/
51. Laminectomy/
52. Rhizotomy/
53. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy)
54. (surgical decompression)
55. (#11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31 OR #32 OR #33 OR #34 OR #35 OR #36 OR #37 OR #38 OR #39 OR #40 OR #41 OR #42 OR #43 OR #44 OR #45 OR #46 OR #47 OR #48 OR #49 OR #50 OR #51 OR #52 OR #53 OR #54)
56. #10 and #55

System for Information on Grey Literature in Europe 1980 to March 2005

Searched on 16 June 2008. Search updated on 4 December 2009.

1. (ischialg* or sciatic*)
2. (lumb* or sacra* or spin*) and (radicul*)
3. (sciatic nerve* or lumbar nerve* or spinal nerve* or sacral nerve*) and (irritation* or inflammation* or pain* or neuropath* or dysfunction* or compressio* or injur* or traum*)
4. (intervertebral disk or intervertebral disc or lumbar disc* or lumbar disk* or lumbosacral disc* or lumbosacral disk* or lumbo-sacral disc* or lumbo-sacral disk*) and (hernia* or slip* or prolapse* or degeneration* or fusion* or sclerosis* or rupture* or distortion* or fracture*)
5. (refer* or radiat*) and (back or leg or foot)
6. #5 OR #4 OR #3 OR #2 OR #1
7. (treatment* or therap* or manag* or surg* or modalit*)
8. (bed rest* or activ* or exercise* or education* or instruction* or advice*)

9. (physio* or physical* or exercis* or heat* or hot* or thermal* or infra?red* or ultrasound* or ultrasonic* or short-wave* or exercise*) and (therap* or treatm* or modalit*)
10. (nerve or electric) and (stimulation)
11. (complement* or holistic* or spina* or chiropract* or osteopath* or physic* or homeopath* or acupunctur* or musculo?skeletal or myofunctional) and (massage* or manipulate* or therap* or treatment* or medicin*)
12. (brace* or sling* or splint* or corset*)
13. (non?steroidal anti?inflammatory or non?narcotic or opioid* or opiate*) and (drug* or analges* or agent*)
14. (paracetamol or acetaminophen)
15. (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib)
16. (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol)
17. (epidural) and (analges* or injection*)
18. (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone)
19. (traction or stretch or weights)
20. (chemolysis or chemonucleolysis)
21. (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy)
22. surgical decompression*
23. #22 OR #21 OR #20 OR #19 OR #18 OR #17 OR #16 OR #15 OR #14 OR #13 OR #12 OR #11 OR #10 OR #9 OR #8
24. #6 and #23

Web of Knowledge [all databases: Science Citation Index-Expanded and Social Sciences Citation Index, BIOSIS Previews (with Human Studies Restriction) and ISI Proceedings]. All time span to 16 June 2008

Searched on 16 June 2008. Search updated on 4 December 2009.

1. TS = (sciatic* or ischialg*)
2. TS = ((lumb* or sacra* or spin*) SAME (radicul*))
3. TS = ((sciatic nerve* or lumbar nerve* or spinal nerve* or sacral nerve*) SAME (irritation* or inflammation* or pain* or neuropath* or dysfunction* or compressio* or injur* or traum*))
4. TS = ((intervertebral disk or intervertebral disc or lumbar disc or lumbar disk or lumbosacral disc or lumbosacral disk or lumbo-sacral disc or lumbo-sacral disk) SAME (hernia* or slip* or prolaps* or degenerat* or fusion* or sclerosis* or rupture* or distortion* or fracture*))

5. TS = ((lumbosacral nerve root* or lumbo-sacral nerve root* or lumbar nerve root*) SAME (irritat* or inflammat* or pain* or neuropath* or dysfunction* or compressio* or injur* or traum*))
6. TS = ((refer* or radiat*) SAME (back or leg or foot))
7. #6 OR #5 OR #4 OR #3 OR #2 OR #1
8. TS = (bed rest* or activ* or exercise* or education* or instruction* or advice*)
9. TS = (trans?cutaneous electric nerve stimulation*)
10. TS = ((complement* or holistic* or herbal* or spina* or chiropract* or massage* or osteopath* or homeopath* or acupunctur* or musculo?skeletal or myofunctional or physio* or physical* or exercis* or heat* or hot* or thermal* or infra?red* or ultrasound* or ultrasonic* or short-wave*) SAME (therap* or treatm* or modalit* or manag* or manipulate* or medicin*))
11. TS = (orthotic device* or brace* or sling* or splint* or corset*)
12. TS = analgesia*
13. TS = ((non-steroidal anti inflammatory or non-steroidal anti-inflammatory or non?narcotic or opioid* or opiate*) SAME (drug* or analges* or agent*))
14. TS = (paracetamol or acetaminophen)
15. TS = (ibuprofen or aceclofenac or acemetacin or celecoxib or dexketoprofen or diclofenac sodium or etodolac or etoricoxib or fenbufen or fenoprofen or flurbiprofen or indometacin or indomethacin or ketoprofen or mefenamic acid or meloxicam or nabumetone or naproxen or piroxicam or sulindac or tenoxicam or tiaprofenic acid or azapropazone or biarison or acetaminophen or nimesulide or oxyphenbutazone or azapropazone or felbinac or alclofenac or nimesulid or etofenama or loxoprofen or phenylbutazone or valdecoxib or lornoxicam or etoricoxib)
16. TS = (buprenorphine or butorphanol or codeine or dextromoramide or dextropropoxyphene or dihydromorphine or diphenoxylate or etorphine or fentanyl or heroin or hydrocodone or hydromorphone or levorphanol or meperidine or meptazinol or methadone or methadyl acetate or morphine or nalbuphine or oxycodone or oxymorphone or pentazocine or phenazocine or phenoperidine or pirinitramide or promedol or sufentanil or tilidine or tramadol)
17. TS = ((epidural) SAME (analges* or injection*))
18. TS = (dexamethasone or hydrocortisone or prednisolone or methylprednisolone or prednisone or methylprednisone or triamcinolone)
19. TS = (orthopedic* or traction*)
20. TS = ((disc or disk) SAME (chemolysis or chemonucleolysis))
21. TS = (discectomy or diskectomy or microdiscectomy or microdiskectomy or rhizotomy or sequestrectomy or vertebroplasty or nucleoplasty or laminectomy)
22. TS = ((neuro* or surg*) SAME (decompression))
23. #22 OR #21 OR #20 OR #19 OR #18 OR #17 OR #16 OR #15 OR #14 OR #13 OR #12 OR #11 OR #10 OR #9 OR #8
24. #23 AND #7

Appendix 2

Quality assessment checklist

Quality assessment for effectiveness studies

Controlled trials and observational studies will be assessed using the following criteria, which are based on the checklist reported by van Tulder *et al.*[30] and a checklist developed by the EPHPP team.[31]

The definition for selection bias used by EPHPP relates to the study sample not being representative of the target population. However, here we have used the term selection bias in relation to the systematic difference between the comparison groups at baseline.

External validity

External validity will be assessed according to the context of the study, within the country of origin.

Are the individuals selected to participate in the study likely to be representative of the target population?

In order to receive a YES, authors must have done everything reasonably possible to ensure that the target population is represented. The study will be scored PARTIAL if participants might not be representative, e.g. if they were referred from a specific source (a single GP practice, clinic, etc.) within a target population, even if it is in a systematic manner; or, included the patients of a single clinician/surgeon. The study will be scored NO if patients are self-referred (e.g. private clinic) or attending a clinic where care is provided by health-care professionals that are still training (e.g. physiotherapy or chiropractic clinics at a college/university). Clinics held at university hospitals or within tertiary care settings that also provide a service to the local community, i.e. receive routine referrals, will be scored PARTIAL.

What percentage of selected individuals agreed to participate?

The percentage of subjects in the control and intervention groups that agreed to participate in the study before they were assigned to intervention or control groups (80–100%, 60–79% and < 60%). This item will be graded as not applicable (NA) if the study was directed at a group of people in a specific geographical area, city, etc.

Were the staff, places and facilities where the patients were treated, representative of the treatment the majority of patients receive?

The reviewer will determine if this is adequate or if enough information is given in order to score YES. The study will be scored PARTIAL if the study only includes care provided by a single clinician/surgeon.

Selection bias and confounders

Study design

Studies will be categorised using the taxonomy reported by Deeks *et al.*[298] (which has been adapted from CRD report 4[27]).

Was the method of randomisation adequate?

The method of random allocation is adequate, if the randomisation sequence allows each study participant to have an equal chance of receiving each intervention, e.g. computer-generated random numbers and random number tables. The method of random allocation is deemed inadequate (and scored NO), if it is not entirely transparent, e.g. the method of randomisation is described as alternation, case record numbers, dates of birth, day of the week. Studies that use serially numbered envelopes with no further information about how the random number sequence was generated, will be scored as UNCLEAR. Studies that just use the term 'randomisation' or 'random allocation' will be scored as UNCLEAR. Non-randomised studies would score NO.

Was the treatment allocation concealed?

In order to receive a YES, the person recruiting and assessing the eligibility of participants should have no information or influence on assignment of the intervention and they should not be able to predict allocation. Ideally, allocation should be remote or secure from all clinicians. Examples of adequate approaches include centralised or pharmacy-controlled randomisation and on-site computer-based systems with randomisation sequence that is not readable until allocation. The reviewer will score studies that use serially numbered identical containers, serially or sequentially numbered envelopes, or opaque sealed envelopes as PARTIAL. Examples of inadequate approaches include alteration, case record numbers, week days and open random number lists. Observational studies would score NO.

Indicate the percentage of relevant prognostic factors that were measured in both groups prior to the intervention

Relevant prognostic factors relate to demographic factors, socioeconomic factors, duration and severity of sciatica, psychological factors, previous treatments, past medical history, physical factors (e.g. SLR test) and value of main outcomes (80–100%, 60–79% and < 60%).

Were the groups similar at baseline for relevant prognostic factors?

The reviewer will determine if this is adequate, or if enough information is given, in order to score YES.

Were all participants recruited from same population (or appropriate alternative)?

The reviewer will determine if this is adequate, or if enough information is given, in order to score YES.

Were participants in both groups recruited over the same time (or similar point in their disease/illness/treatment?)

The reviewer will determine if this is adequate, or if enough information is given, in order to score YES.

Was an ANCOVA or similar method used to allow for possible baseline imbalance?

In order to receive a YES, the study should use a method of analysis that controls for possible baseline imbalance between groups. If differences between groups for important confounders have been controlled for in the design (stratification or matching), then the study should also be marked as YES. If randomisation was used, then studies must report that groups are balanced at baseline to score YES. If < 60% of important prognostic factors are reported, then the study is scored NO?

Were co-interventions avoided or similar?

In order to score YES, co-interventions should either be avoided in the trial design or similar between the intervention and control groups.

Detection bias

Accuracy of data collection tool.

(a) Were tools shown to be valid?

The item will receive a YES, if the tools are known or have been shown to measure what they were intended to measure and NO, if there was no attempt to show that the tools measured what they were intended to measure. Tools that are unreferenced are unlikely to been validated. Where the primary outcomes are reported, these are the outcome measures which will be used to assess this criterion.

(b) Were tools shown to be reliable?

The item will receive a YES, if the tools are known or have been shown to be consistent and accurate in measuring the outcome of interest (e.g. test–retest, Cronbach's alpha, inter-rater reliability) and NO, if there was no attempt to show that the tools were consistent and accurate in measuring the outcome of interest. Tools that are unreferenced are unlikely to been tested for reliability.

Was the timing of outcome assessment in all groups similar?

In order to score YES, the timing of outcome assessment should be identical for all intervention groups and for all important outcomes assessments.

Were the outcome assessors blinded to the intervention or exposure status of participants?

The study will be scored YES if the assessors were described as blinded to which participants were in the control and intervention groups and NO, if the assessors were able to determine what

group the participants were in. The study will be scored NA if the data were self-reported and collected by way of a survey, questionnaire or interview.

Were data analysts blinded to participants groups?

The study will be scored YES, if the analysts were described as being blind to which participants were in the control and intervention groups and NO, if the analysts were able to determine which group the participants were in.

(Studies that fail this last criterion will only receive a 'moderate' or 'weak' for performance bias.)

Performance bias

Were the participants blinded to the intervention?

The reviewer will need to determine if this is adequate or if enough information about the blinding is given in order to score YES. Studies marked as 'double blind' with no further information will be marked as PARTIAL.

Were the physicians blinded to participants groups?

The reviewer will need to determine if this is adequate or if enough information about the blinding is given in order to score YES. Studies marked as 'double blind' with no further information will be marked as PARTIAL.

Were there any attempts to test the efficacy of blinding procedures?

The reviewer will need to determine if this is adequate, or if enough information is given, in order to score YES.

Attrition bias

Were the characteristics of dropouts similar to those who remained in the study?

The reviewer will need to determine if this is adequate, or if enough information is given, in order to score YES. Studies with ≤ 5% dropouts will receive a YES.

Was there a differential dropout rate between the groups?

The reviewer will need to determine if this is adequate, or if enough information is given, in order to score YES.

Indicate the percentage of participants completing the study (if the percentage differs by groups, record the lowest)

The number of participants who were included in the study, but did not complete the observation period or were not included in the analysis, must be described and reasons given. If the percentage of withdrawals and dropouts does not exceed 20% for short-term follow-up (< 3 months) or medium-term follow-up (3–11 months) and 30% for long-term follow-up

(≥ 12 months) and does not lead to substantial bias, a YES is scored (80–100%, 60–79% and < 60%). (Note these percentages are arbitrary, not supported by literature.)

Is the analysis performed according to intervention allocation status rather than actual intervention received?

The reviewer will need to determine if this is adequate, or if enough information is given, in order to score YES.

Did the analysis include all allocated patients irrespective of non-compliance?

The reviewer will need to determine if this is adequate, or if enough information is given, in order to score YES. Studies with ≤ 5% dropouts will receive a YES.

Items will be graded as either YES (+), NO (–), PARTIAL (±), UNCLEAR (or not enough information or not stated) and NA.

Quality assessment of economic evaluations

Economic evaluations

Cost-effectiveness studies were assessed using the following criteria, which is an updated version of the checklist developed by Drummond *et al.*[29]

Study question

1. Costs and effects are examined.
2. Alternatives are compared.
3. The viewpoint(s)/perspective of the analysis is clearly stated (e.g. NHS, society).

Selection of alternatives

4. All relevant alternatives are compared (including 'do nothing' if applicable).
5. The alternatives being compared are clearly described (who did what, to whom, where and how often).
6. The rationale for choosing the alternative programmes or interventions compared is stated.

Form of evaluation

7. The choice of form of economic evaluation is justified in relation to the questions addressed.
8. If a cost minimisation design is chosen, equivalent outcomes are adequately demonstrated.

Effectiveness data

9. The source(s) of effectiveness estimates are stated (e.g. single study, selection of studies, systematic review, expert opinion).
10. Effectiveness data from an RCT or review of RCTs.
11. Potential biases identified (especially if data are not from an RCT).
12. Details of the method of synthesis or meta-analysis of estimates are given (if based on an overview of a number of effectiveness studies).

Costs

13. All the important and relevant resource use is included.
14. All the important and relevant resource use is measured accurately (with methodology).
15. Appropriate unit costs are estimated (with methodology).

16. Unit costs are reported separately from resource-use data.
17. Productivity costs are treated separately from other costs.
18. The year and country to which unit costs apply is stated with appropriate adjustments for inflation and/or currency conversion.

Benefit measurement and evaluation

19. The primary outcome measure(s) for the economic evaluation are clearly stated (cases detected, life-years, QALYs, etc.).
20. Methods to value health states and other benefits are stated (e.g. TTO).
21. Details of the individuals from whom valuations were obtained are given (patients/members of the public/health-care professionals).

Decision modelling

22. Details of any decision model used are given (e.g. decision tree, Markov model).
23. The choice of model used and the key input parameters on which it is based are adequately detailed and justified.
24. All model outputs are described adequately.

Discounting

25. A discount rate is used for both costs and benefits.
26. The discount rates accord with NHS guidelines (3.5% for costs and benefits and adjusted to 0% and 6% in sensitivity analysis).

Allowance for uncertainty

Stochastic analysis of patient-level data

27. Details of statistical tests and CIs are given for stochastic data.
28. Uncertainty around cost-effectiveness is expressed (e.g. CIs around ICER, cost-effectiveness acceptability curves).
29. Sensitivity analysis is used to assess uncertainty in non-stochastic variables (e.g. unit costs, discount rates) and analytic decisions (e.g. methods to handle missing data).

Stochastic analysis of decision models

30. All appropriate input parameters are included with uncertainty.
31. Second-order uncertainty (uncertainty in means) is included rather than first-order uncertainty (uncertainty between patients).
32. Probability distributions are adequately detailed and appropriate.
33. Sensitivity analysis is used to assess uncertainty in non-stochastic variables (e.g. unit costs, discount rates) and analytic decisions (e.g. methods to handle missing data).

Deterministic analysis

34. The approach to sensitivity analysis is given (e.g. univariate, threshold analysis).
35. The choice of variables for sensitivity analysis is justified.
36. The ranges over which the variables are varied are stated.

Presentation of results

37. Incremental analysis is reported using appropriate decision rules.
38. Major outcomes are presented in a disaggregated as well as an aggregated form.
39. Applicable to the NHS setting.

Items will be graded as either YES (+ item adequately addressed), NO (– item not adequately addressed), PARTIAL (±), UNCLEAR (or not enough information or not stated) and NA.

Studies that incorporated a decision-analytic model were further evaluated using the following criteria based on work of Weinstein *et al.*[31]

Decision context

40. Is there a full description of the decision question, its context and the process by which this was identified?
41. Do the model structure and parameters adequately represent the key decision options and perspective?
42. Do the treatment options cover those of immediate interest to the decision-maker?
43. Are there additional treatment options likely to be of interest in other decision and clinical contexts?
44. Is the model structure easily adaptable to include future developments?

Health states and clinical outcomes

45. Does the model structure fit (appropriate and relevant) with the clinical theory of the disease process?
46. Does the model appropriately capture the full impact and cost of treatments?
47. Does the model appropriately represent the patient population(s) of concern?
48. How has heterogeneity been included in the model?
49. Were appropriate methods used to include patients' treatment and disease history and effects on event rates?
50. Does the model clearly list and justify structural assumptions, and likely impacts on outcomes?
51. How were structural aspects tested by the modeller (e.g. clinical opinion, literature review, clinical guidelines)?
52. Was the modelling methodology fully justified (e.g. Markov, decision tree, discrete stimulation)?

Transparency

53. Is the model structure transparent (structure, parameters and values)?
54. Is the physical model fully accessible to a non-modelling audience?

Timing

55. Are the time horizons appropriate, given the disease, treatments and decision context (1 year, 10 years, lifetime)?
56. Are the model's cycle times appropriate to the disease and treatments of interest?
57. Have appropriate methods been used to extrapolate data over extended time horizons?

Data values

58. Is there a full description of a thorough review process identifying data values?
59. Are the sources of data values fully described and appropriate?
60. Are there clear criteria for data inclusion/exclusion?
61. Are there appropriately documented value ranges for data parameters for sensitivity analysis?
62. Is there clear identification of areas in the model populated with clinical opinion? Is the approach appropriate?

Data preparation

63. Are there full details on data preparation to generate parameter values (e.g. meta-analysis, relative risk rates, estimation of utility, calculation of transition rates)?
64. Were transition rates correctly calculated from interval data?
65. Were survival data appropriately extrapolated/modelled (e.g. Weibull, exponential)?

66. Are sensitivity analyses adequately handled and classified (e.g. probabilistic, one way, multiway)?

Data incorporation

67. Are data units, time intervals and patient characteristics consistent?
68. Was uncertainty adequately incorporated in the model using appropriate sensitivity structures and analyses?

Internal validation

69. Was there a thorough and adequate quality control/error checking test plan?
70. Was the model replicated and compared using alternative software?
71. Was there a clinical face value reality check? How was this conducted (e.g. internal review, expert review)?
72. Was the model shown to accurately replicate data used in model construction?

Cross-model validation

73. Was the model directly compared and contrasted with existing models in the same disease area?
74. Were differences between models appropriately discussed, categorised and acted on?

External validation

75. Was the model validated against independent data?
76. Were data suitable in terms of its context for comparison (patient group, treatments, timelines, outcomes)?
77. Which interim outputs were matched?

Items will be graded as either YES (+ item adequately addressed), NO (– item not adequately addressed), PARTIAL (±), UNCLEAR (or not enough information or not stated) and NA.

Appendix 3

WinBUGS code used for the mixed treatment comparison analyses

Global effect

```
#Random effects model for multi-arm trials
model{
for(i in 1:NS){
        w[i,1] <-0
              delta[i,t[i,1]]<-0
              mu[i] ~ dnorm(0,.0001)            # vague priors for 65 study baselines
              for (k in 1:na[i])  {
                    r[i,k] ~ dbin(p[i,t[i,k]],n[i,k])   # binomial likelihood
                                logit(p[i,t[i,k]])<-mu[i] + delta[i,t[i,k]]
            rhat[i,k] <- p[i,t[i,k]] * n[i,k]
          dev[i,k] <- 2*(r[i,k] * (log(r[i,k]/rhat[i,k])) + (n[i,k]-r[i,k]) * (log((n[i,k]-r[i,k])/(n[i,k]-
rhat[i,k])))))
                                                  }
                    sumdev[i] <- sum(dev[i,1:na[i]])

# model
                     for (k in 2:na[i]) {
              delta[i,t[i,k]] ~ dnorm(md[i,t[i,k]],taud[i,t[i,k]])  # trial-specific LOR
                                                                    distributions
              md[i,t[i,k]] <-  d[t[i,k]] - d[t[i,1]]  + sw[i,k]       # mean of LOR distributions
               taud[i,t[i,k]] <- tau *2*(k-1)/k                      #precision of LOR distributions
               w[i,k] <- (delta[i,t[i,k]]  - d[t[i,k]] + d[t[i,1]])    #adjustment, multi-arm RCTs
                 sw[i,k] <-sum(w[i,1:k-1])/(k-1) }            # cumulative adjustment for multi-
                                                                arm trials
  }
ssumdev <-sum(sumdev[])
d[1]<-0
for (k in 2:NT){d[k] ~ dnorm(0,.0001) }     #  vague priors for basic parameters

sd~dunif(0,2)                                 #  vague prior for random effects standard
deviation
tau<-1/pow(sd,2)
tau.squared <- sd*sd


# Absolute log odds(success) on Treatment A,  based on a separate model on the
#  30 studies Treatment A arms.
mA ~ dnorm(-0.476, 40.076)
# Absolute pr(success) Treatments B,C,D based on T[1] and the
#   MEAN  Relative treatment effects
for (k in 1:NT)   { logit(T[k])<- mA  +d[k] }


# Ranking and prob{treatment k is best}
for (k in 1:NT) { rk[k]<- NT+1 - rank(T[],k)
                    best[k]<-equals(rk[k],1)}
```

```
# pairwise ORs
for (c in 1:(NT-1))
        {  for (k in (c+1):NT)
              {  lor[c,k] <- d[k] - d[c]
                 log(or[c,k]) <- lor[c,k]
              }
         }

}
```

Pain

```
#Random effects model combining study- and arm-based summaries
model{
        for (i in 1:N.trial){
                prec[i]<- 1/var[i]                  #Precision of differences = 1/var
                diff[i]~dnorm(delta[i],prec[i]) #'Likelihood for mean differences between
arms

                delta[i]~dnorm(md[i],tau)       #Random effects model for delta's
                md[i]<- d[t.trial[i]] - d[b.trial[i]] #Define functional parameters for t[i] vs
b[i]


        #       dev2[i] <- (diff[i]-delta[N.arm+i])*(diff[i]-delta[N.arm+i])/var[i]}
    #     sumdev2 <- sum(dev2[1:N.trial])


dev2[i] <- (diff[i]-delta[i])*(diff[i]-delta[i])/var[i]}
        sumdev2 <- sum(dev2[1:N.trial])

 for(i in 1:N.arm){
                prec.y[i]<- n[i]/(sd[i]*sd[i])
                y[i] ~ dnorm(my[i],prec.y[i])
                my[i]<-mu[s[i]]+ delta[i+N.trial]*(1-equals(t.arm[i],b.arm[i]))


#Random effects model for treatment effects
                delta[i+N.trial] ~ dnorm(md[i+N.trial],tau)
                md[i+N.trial] <- d[t.arm[i]] - d[b.arm[i]]

        #       dev[i] <- (y[i]-my[i])* (y[i]-my[i])*prec.y[i]          }
   #  sumdev <- sum(dev[1:N.arm])

        dev[i] <- (y[i]-my[i])* (y[i]-my[i])*prec.y[i]          }
     sumdev <- sum(dev[1:N.arm])

tot.sumdev <- sumdev  + sumdev2


        for(j in 2:54){ mu[j]~dnorm(0,.0001)}

        d[1]<-0
        for (k in 2:NT) {d[k] ~ dnorm(0,.00001) }      # vague priors for basic
parameters
        sd.d~dunif(0,50)
                                                # vague prior for random effects sd
        tau<-1/pow(sd.d,2)

        tau.squared <- sd.d*sd.d
```

```
# Ranking and prob{treatment k is best}
        for (k in 1:NT) {
                rk[k]<- rank(d[],k)
                best[k]<-equals(rk[k],1)
                }

# pairwise mean difference comparisons
for (c in 1:(NT-1)) {  for (k in (c+1):NT)  { SMD[c,k] <- (d[k] - d[c] ) }  }

}
```

CSOMs

```
#Random effects model based on differences between groups
model{
        for (i in 1:N){
                prec[i]<- 1/var[i]          #Precision of differences = 1/var
                diff[i]~dnorm(delta[i],prec[i])   #'Likelihood for mean differences
between arms
                delta[i]~dnorm(md[i],tau)        #Random effects model for delta's
                md[i]<- d[t[i]] - d[b[i]]        #Define functional parameters for t[i] vs
b[i]
#Residual Deviance for data i
      dev[i] <- (diff[i]-delta[i])* (diff[i]-delta[i])/var[i]
                }
resdev <- sum(dev[])
        d[1]<-0
        for (k in 2:NT) {d[k] ~ dnorm(0,.00001) }        # vague priors for basic
parameters
        sd.d ~ dunif(0,5)                              # vague prior for random effects sd
        tau <- 1/pow(sd.d,2)
        tau.squared <- sd.d*sd.d


# Ranking and prob{treatment k is best}
        for (k in 1:NT) {
                rk[k]<- rank(d[],k)
                best[k]<-equals(rk[k],1)
                }

# pairwise mean difference comparisons
for (c in 1:(NT-1)) {  for (k in (c+1):NT)  { SMD[c,k] <- (d[k] - d[c] ) }  }

}
```

Appendix 4

Ongoing or unpublished studies identified from search of trial registries

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
1	ACTRN12606000456550/ Australian New Zealand Clinical Trials Registry	Guy Ludbrook Metabolic Pharmaceuticals Ltd	To examine the efficacy of ACV1 [(conotoxin VC1.1) neuronal nicotinic receptor antagonist] to relieve sciatic pain	RCT (crossover)	Patients with moderate-to-severe spontaneous neuropathic pain radiating down both buttocks or legs for ≥3 months (*n*=40)	Subcutaneous injections of 0.4 mg/kg ACV1 once daily for 7 days	Placebo	Safety and tolerability of ACV1	Completed
2	ACTRN12608000401358/ Australian New Zealand Clinical Trials Registry	Nikolai Bogduk Charities/societies/ foundations	To test the efficacy of transforaminal epidural injection for relieving pain and restoring function	RCT	Potential patients identified by neurosurgeons who have radicular pain and disc herniation demonstrated on computerised tomography (CT) or MRI (*n*=240)	Transforaminal ESI under fluoroscopic guidance	Placebo	Percentage relief of pain. Restoration of function	Open to recruitment
3	ACTRN12609000205235/ Australian New Zealand Clinical Trials Registry	Nicholas Taylor LifeCare Health (a division of Health Networks Australia Ltd)	To compare the outcomes and adverse events of two different physiotherapy treatment approaches	RCT	Patients with clinical and radiological confirmation of lumbar disc herniation with associated radiculopathy for a duration of 6 weeks to 6 months n=150)	Ten sessions of physiotherapy functional restoration	Two sessions of physiotherapy advice over a 10-week period	Back-specific function and leg pain intensity QoL: rate and nature of adverse events Participant satisfaction	Open to recruitment
4	ACTRN12609000207213/ Australian New Zealand Clinical Trials Registry	Guy Ludbrook Bioassets Development Corporation CMAX – a division of IDT Australia Limited	To evaluate the safety of three different doses of etanercept versus placebo when administered epidurally	RCT	Healthy males or females with primary diagnosis of sciatica of between 6 weeks' and 26 week's duration (*n*=40)	Three dose levels of etanercept (0.5 mg, 2.5 mg or 12.5 mg), to be administered twice, 2 weeks apart via the epidural route	2 ml of normal saline, administered twice, 2 weeks apart, via the epidural route	Pain reduction	Open to recruitment
5	ACTRN12609000334202/ Australian New Zealand Clinical Trials Registry	Jon Ford LifeCare Health (a division of Health Networks Australia Ltd)	To compare the outcomes and adverse events of two different physiotherapy treatment approaches	RCT	Patients with low back pain with or without leg pain with a 6 weeks to 6 months duration (*n*=150)	Ten 30-minute sessions of physiotherapy over a 10-week period	Two 30-minute sessions of physiotherapy advice over a 10-week period	Back-specific function and leg pain intensity QoL: rate and nature of adverse events Participant satisfaction	Open to recruitment

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
6	ACTRN12609000343202/ Australian New Zealand Clinical Trials Registry	Jon Ford LifeCare Health (a division of Health Networks Australia Ltd)	To compare the outcomes and adverse events of two different physiotherapy treatment approaches	RCT	People with reducible low back pain (with or without associated leg pain) with a directional preference for extension with or without a lateral component, for duration of 6 weeks to 6 months ($n=124$)	Ten sessions of specific physiotherapy management over 10 weeks, involving 30-minute sessions	Two sessions of physiotherapy advice over a 10-week period	Back-specific function and leg pain intensity QoL: rate and nature of adverse events Participant satisfaction	Open to recruitment
7	ACTRN12609000412235/ Australian New Zealand Clinical Trials Registry	Megan Davidson LifeCare Health (a division of Health Networks Australia Ltd)	To compare the outcomes and adverse events of two different physiotherapy treatment approaches	RCT	Patients with lumbar non-reducible discogenic lower back pain with or without associated leg pain, pins and needles, or numbness for a duration of 6 weeks to 6 months ($n=150$)	Ten sessions (30 minutes) of physiotherapy functional restoration over a 10-week period	Two sessions (30 minutes) of physiotherapy advice over a 10-week period	Back-specific function and leg pain intensity QoL: rate and nature of adverse events Participant satisfaction	Open to recruitment
8	ACTRN12609000834257/ Australian New Zealand Clinical Trials Registry	Jon Ford LifeCare Health (a division of Health Networks Australia Ltd)	To compare the outcomes and adverse events of two different physiotherapy treatment approaches	RCT	People with low back pain with or without sciatica for duration of 6 weeks to 6 months ($n=200$)	Ten sessions (each session 30 minutes, one-on-one) of specific physiotherapy over a 10-week period	Two sessions (each session 30 minutes, one-on-one) of physiotherapy advice over a 10-week period	Back-specific function and leg pain intensity QoL: rate and nature of adverse events Participant satisfaction	Open to recruitment
9	ChiCTR-TRC-09000604/ Chinese Clinical Trials Registry	Rixin Chen Affiliated hospital of Jiangxi University of Traditional Chinese Medicines	Not stated	RCT	$n=456$	Heat-sensitive point suspension moxibustion	Non-heat-sensitive point suspension moxibustion Western medicine	Pain reduction	Recruiting

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
10	ChiCTR-TRC-09000695/ Chinese Clinical Trials Registry	Chan, Simon Kin Cheong Department of Anaesthesia and Intensive Care, Chinese University of Hong Kong	Not stated	RCT	Adult patients interested in participating with sciatica and radiological evidence of disc degeneration ($n=100$)	Pulsed radiofrequency treatment for a duration of 6 weeks	Spinal nerve root steroid injection	Pain reduction	Not yet recruiting
11	DRKS00000092/German Clinical Trials Register	Christian-Andreas Müller Institutional budget, no external funding	To evaluate the influence of the microsurgical versus minimal invasive (metrix) approaches on clinical results following lumbar disc herniation surgery	RCT	Patients with mono-segmental radicular compression syndrome due to lumbar disc herniation, indicated to be treated surgically ($n=250$)	Conventional approach for lumbar disc herniation surgery Intervention	Minimal invasive (metrix) approach for lumbar disc herniation surgery	Reduction of postoperative low back and sciatic pain	Recruiting planned
12	IRCT138809251766N2/ IRCT	Karim Nasseri Vice chancellor for research, Kurdistan University of Medical Sciences	To compare the effect of ESI on pain relief	RCT	Patients with history of intervertebral disc herniation with or without spinal stenosis confirmed with MRI ($n=50$)	ESI	Placebo	Pain relief	Complete
13	ISRCTN12574253/ISRCTN	Trond Iversen Health North RHF (Regional Health Authority, Norway)	To test the efficacy of epidural sacral injection with triamcinolone for relieving radiculopathy pain	RCT	Patients with sciatic pain >12 weeks and radiculopathy L3-S1 ($n=240$)	Epidural sacral injection with triamcinolone	Epidural sacral injection saline	ODI	Completed/not recruiting
14	ISRCTN14206374/ISRCTN	Bart Depreitere Medtronic B.V. and Stryker Nederland	To test the hypothesis that transmuscular surgical approach causes less damage to postoperative posture control and early postoperative physiotherapy improves short- and long-term posture control	RCT	One level disc herniation, either L4-L5 or L5–S1, explaining symptoms and representing operative indication ($n=100$)	Transmuscular surgical approach Early postoperative physiotherapy	Classic paramedian approach 'conservative' treatment	Muscle control (postural balance test and sit-to-stand test), assessed in the laboratory	Completed/not recruiting

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
15	ISRCTN94584126	Maziar Badii WorkSafeBC – Workers Compensation Board of British Columbia Research Secretariat	To test the hypothesis that fluoroscopically guided transforaminal ESI (TFESI) into the immediate vicinity of the affected nerve root is associated with (1) improvement in pain and functional status and (2) reduction in rate of progression to surgery	RCT	Patients with pain in a single lower extremity below the level of the knee of <18 weeks duration ($n=88$)	1.0 cc Celestone (Bayer Shering Parma, Berlin, Germany) (40 mg/ml) plus 1.0 cc of 0.5% bupivicaine (treatment)	1.0 cc sterile saline plus 1.0 cc of 0.5% bupivicaine (control)	Leg pain relief Modified RMDQ	Completed/not recruiting
16	NCT00009672/ ClinicalTrials.gov	National Institute of Dental and Craniofacial Research (NIDCR)	To test the effectiveness of two drugs – nortriptyline and MS contin (a type of morphine) – to treat pain caused by lumbar radiculopathy or sciatica	RCT	Patients between 18 and 65 years of age who have had sciatica pain daily for ≥3 months ($n=80$)	Nortriptyline morphine nortriptyline plus morphine	Active placebo, benztropine. An inert placebo	Daily overall pain relief	Completed/ December 2006
17	NCT00107055/ ClinicalTrials.gov	Randall Moreadith Renovis Inc.	To gain initial safety and efficacy data on the experimental agent REN-1654 in patients with pain that radiates down the leg(s), and is typical of sciatica (lumbosacral radiculopathy)	RCT	Subjects with leg pain radiating to or below the knee in a dermatomal pattern, diagnosed as being due to sciatica or lumbar or lumbosacral radiculopathy, the onset of which occurred 2–12 weeks prior to initiation of study treatment ($n=72$)	REN-1654	Placebo	Leg pain	Active, not recruiting
18	NCT00159705/ ClinicalTrials.gov	PfizerCT.gov call centre Pfizer	To test the efficacy and safety of pregabalin in the treatment of neuropathic pain associated with lumbo-sacral radiculopathy	RCT	Patient having pain consistent with a diagnosis of chronic lumbosacral radiculopathy due to spinal stenosis or disc herniation and present for ≥3 months ($n=276$)	Pregabalin	Placebo	Pain measurement	Completed

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
19	NCT00163553/ ClinicalTrials.gov	Dean Cowie Austin Health	To test the hypothesis that epidural pethidine is an effective form of pain relief following lumbar spinal surgery, resulting in significantly lower usage of concomitantly administered (intravenous) patient-controlled analgesia (PCA) pethidine	RCT	Adults ≥ 18 years, undergoing lumbar spinal surgery ($n=60$)	Epidural pethidine	Placebo	Cumulative 24-hour pethidine consumption	Recruiting
20	NCT00220935/ ClinicalTrials.gov	John Triano Texas Back Institute	To evaluate the results of using the Orthotrac Pneumatic Vest vs an EZ form brace in patients with radiating leg pain from disc bulge/ protrusion/herniation	RCT	Patients aged 21–55 years with no history of prior surgery or spine surgery in previous 6 months, having symptoms for >4 weeks and MRI confirmed disc bulge/ protrusion/herniation (HNP) site consistent with symptoms with no neurological deficit ($n=150$)	Orthotrac Pneumatic Vest	EZ form brace	VAS, ODI and SF-36	Completed
21	NCT00300898/ ClinicalTrials.gov	Leonardo Kapural Cleveland Clinic	To learn which of three minimally invasive procedures [nucleoplasty, percutaneous decompression and intervertebral electrothermal disc decompression (IDET)] is the most effective for treatment of contained lumbar disc herniation	RCT	Patients with a history of concordant radicular leg pain unresponsive to conservative treatment for >3 months; leg pain must be greater than back pain; contained disc herniation as evidenced by MRI; and no evidence of psychological issues by exam or history ($n=72$)	Nucleoplasty Percutaneous decompression Intervertebral electrothermal disc decompression (IDET)	Behavioural: conservative treatment with oral medications, PT, ESIs	Pain intensity using VAS	Not yet recruiting

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
22	NCT00384007/ ClinicalTrials.gov	Pinnacle Pain Medicine/ HydroCision Inc.	To compare a standard surgical procedure, open surgical microdiscectomy, used primarily to relieve leg pain and repair disc herniation with a newer surgical procedure, hydrodiscectomy with Spinejet®	RCT	Patients aged 18–75 years who have had posterolateral single lumbar contained disc herniation, any level, up to one-third of spinal canal sagittal diameter, concordant radicular pain ± back pain, and MRI confirmed nerve root contact/compression; failed trial of at least one NSAID within 6 months; failed at least 2 weeks' PT within 6 months; failed at least two ESIs, no less than 2 weeks apart within 6 months; and, initial or recurrent episode of radiculitis ($n=58$)	Hydrodiscectomy with Spinejet	Open surgical microdiscectomy	Pain reduction	Completed
23	NCT00385086/ ClinicalTrials.gov	Francois Rannou Assistance Publique – Hôpitaux de Paris	To test the efficacy of TNF-α inhibition in sciatica with postoperative lumbar spinal fibrosis	RCT	Patients >18 years old who had postdiscectomy sciatica; pain with VAS >40 mm and impossibility to have their usual activity; surgical discectomy (<2 years and >6 months); no pain of >1 month and <1 year after the discectomy; MRI with gadolinium injection of <6 months and done >6 months after the discectomy; presence of spinal fibrosis on MRI (hyposignal in T1 enhanced by gadolinium and hypersignal in T2); and failure of epidural injection treatment ($n=40$)	TNF blocker	Placebo	Sciatica pain	Recruiting

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
24	NCT00444405/ ClinicalTrials.gov	Alan Scarrow, Layla Stanek, Pete Miles St. John's Health System	To compare patients who underwent decompression/ discectomy with pedicle screw fusion to patients who received decompression/ discectomy without fusion	Observational	Male or female patients, 18–75 years old who had recurrent lumbar disc herniation by MRI or CT with history of decompression at the same level in the past; recurrent symptomatic history (with or without back pain) with radicular leg pain that improved following the first surgery; flexion and extension radiography that demonstrate an absence of sponylolisthesis or spondylolisthesis with <3 mm of movement ($n=50$)	Repeat lumbar disc decompression/ discectomy	Repeat decompression/ discectomy with pedicle screw fusion	Patient-reported pain, physical function and satisfaction	Recruiting
25	NCT00470509/ ClinicalTrials.gov	Stéphane Genevay University Hospital, Geneva	To determine whether adalimumab (a TNF-α inhibitor) is effective in the treatment of severe and acute sciatica	RCT	Male or female patients, ≥ 18 years old who had episode of radicular pain in one lower limb for <12 weeks; medical evaluation requiring hospitalisation because of pain or functional handicap; a characteristic leg pain in the L3, L4, L5 or S1 territories; a confirmed herniated disc on usual imaging techniques (CT scan or MRI) in the vicinity of the clinically involved nerve root ($n=61$)	Adalimumab	Placebo	Leg pain using VAS	Completed
26	NCT00516009/ ClinicalTrials.gov	Radi Shahien Ziv Hospital	To evaluate the efficacy of intravenous dexamethasone for acute disc herniation-induced sciatica	RCT	Patients aged ≥ 18 years or presented with acute radicular pain for <6 weeks ($n=40$)	Intravenous dexamethasone	Placebo	Pain	Recruiting

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
27	NCT00573807/ ClinicalTrials.gov	Ken Nedd GAAD Medical Research Institute Inc.	To determine the use of far infrared radiation for the treatment of back pain and sciatica	Observational	Persons with lower back pain and sciatica ($n=2$)	Radiation: far infrared radiation (5–20 µm wavelength)	Not stated	Sciatica pain	Active, not recruiting
28	NCT00634946/ ClinicalTrials.gov	Seikagaku Corporation	To determine whether or not SI-6603 is effective in the treatment of lumbar disc herniation	RCT	Patients: with lumbar disc herniation (L4-L5 or L5–S1) as assessed by MRI and clinical symptoms corresponding to position of the impaired nerve root; assessed as positive in the SLR test; with sciatica in either lower leg; with no improvement from pharmacotherapy or concomitant treatment with drug and nerve block ($n=195$)	SI-6603 [(condoliase) chondroitinase]	Placebo	Changes in leg pain from baseline	Active, not recruiting
29	NCT00668434/ ClinicalTrials.gov	Harley Goldberg, Andrew Avins, William Firtch National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)	To determine the effectiveness of the steroid prednisone in decreasing pain and improving function in people with sciatica	RCT	Patients with complaints of low back pain and functionally incapacitating leg pain extending below the knee with a nerve root distribution; nerve root tension signs with or without neurologic abnormalities, fitting the level of the radiculopathy; score of at least 20 on the modified ODI; MRI confirmation of herniated lumbar disc consistent with the signs and symptoms ($n=220$)	Oral prednisone	Placebo	Changes in physical functioning and pain	Recruiting

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
30	NCT00681447/ ClinicalTrials.gov	Laxmaiah Manchikanti Pain Management Center of Paducah	To demonstrate clinically significant improvements in patients undergoing lumbar interlaminar epidurals. Improvement will be assessed in relation to the clinical outcome measures of pain and function and to evaluate and compare the adverse event profile in all patients	RCT	Subjects of ≥ 18 years of age with a history of chronic, function-limiting chronic low back pain ≥ 6 months in duration and who have not had recent surgical procedures within the last 3 months ($n=180$)	Lumbar interlaminar epidural	Lumbar interlaminar epidural	Pain improvement	Enrolling by invitation
31	NCT00733096/ ClinicalTrials.gov	Steven Cohen, Connie Kurihara Johns Hopkins University	To determine the efficacy of transforaminal epidural corticosteroids and transforaminal epidural etanercept, in patients with lumbosacral radiculopathy	RCT	Patients who are 19–70 years old with chronic low back pain of radicular origin of > 4 weeks', but < 6 months' duration; leg pain greater than back pain; failure of conservative therapy to include physical and pharmacotherapy; and, MRI evidence of a lateral or paracentral herniated disc corresponding to the patient's radicular symptoms ($n=78$)	Etanercept methylprednisolone	Normal saline	Numerical rating pain score	Recruiting
32	NCT00749996/ ClinicalTrials.gov	Ferdinand Krappel Medtronic Spinal and Biologics	To assess the short- and long-term effectiveness and patient perception of benefit with the use of a DIAM™ Spinal Stabilization System in the treatment of complex disc disease at a single level from L2 to L5	RCT	$n=288$	Single-level herniectomy followed by placement of the DIAM™ Spinal Stabilization System	Single-level herniectomy	Back-pain score on VAS	Recruiting

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
33	NCT00894972/ ClinicalTrials.gov	Julie Fritz University of Utah	To determine the most effective PT programme for individuals who have undergone lumbar discectomy	RCT	Patients 18–60 years old who had a diagnosis of lumbar disc herniation based on imaging (MRI or CT scan) of the lumbar spine with concurring clinical examination findings (based on the judgment of the attending neurosurgeon) and are appropriate surgical candidate based on the opinion of the attending spine surgeon, and scheduled for single-level lumbar discectomy (open or microdiscectomy) ($n=70$)	General plus specific strengthening rehabilitation following lumbar disc surgery (discectomy)	General strengthening rehabilitation following lumbar disc surgery (discectomy)	Modified ODI	Recruiting
34	NCT00934284/ ClinicalTrials.gov	Julie Fritz University of Utah	To determine if participation in PT in conjunction with a selective nerve root block in the lumbar spine is more effective than just receiving the injection alone for patients with low back and leg pain from a disc herniation (sciatica)		Patients with MRI evidence of disc herniation in the lumbar spine consistent with clinical presentation; and pain and/ or paresthesia in the lumbar spine and a distribution extending distal to the gluteal fold within 24 hours of enrolment ($n=44$)	Injection plus PT	Injection only	Modified ODI, Global Rating of Change	Completed
35	NCT00942227/ ClinicalTrials.gov	Julie Fritz Intermountain Health Care Inc., University of Utah	To determine the effectiveness of adding mechanical traction to standard PT treatments for patients with low back pain	RCT	Patients aged at ≥ 18 years and < 60 years with a chief complaint of pain and/or paresthesia in the lumbar spine with a distribution of symptoms that has extended distal to the gluteal fold on at least one lower extremity within the past 24 hours based on the patient's self-report and ODI score of at least 20% ($n=120$)	Mechanical traction plus standard PT	Standard PT alone	ODI, Global Rating of Change	Recruiting

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
36	NCT00961766/ ClinicalTrials.gov	Biogen Idec	To evaluate the safety, tolerability and pharmacokinetics of BG00010 after intravenous administration to sciatica subjects	RCT	Patients aged 18–70 years, with a diagnosis of unilateral sciatica, determined by the investigator. Sciatica symptoms must be present for ≥6 weeks prior to the screening visit (*n*=56)	BG00010 [(Neublastin) glial cell line-derived neurotrophic factor]	Placebo	Clinical laboratory values, antibodies, pharmacokinetics and adverse events Subject assessments (Likert scale, VAS, quantitative sensation testing and intraepidermal nerve fibre density)	Recruiting
37	NCT01041391/ ClinicalTrials.gov	William Lavelle State University of New York – Upstate Medical University	To examine outcome measurements on patients who undergo surgery to removed a damage lumbar spine disc vs those that chose not to have surgery	Observational model: case–control	Patients 18–90 years of age with a diagnosis of lumbar disc herniation (*n*=200)	Surgical treatment for lumbar disc herniation	Non-surgical treatment for lumbar disc herniation	SF-36, VAS and ODI	Recruiting
38	NCT01052571/ ClinicalTrials.gov	Laxmaiah Manchikanti, Trisha Burks Pain Management Center of Paducah	To evaluate differences in outcomes in patients receiving steroids compared with those patients randomised to the local anaesthetic group who did not receive steroids and to evaluate and compare the adverse event profile in all patients	RCT	Patients who are 18 years of age with disc herniation or radiculitis and with a history of chronic function-limiting low back and lower extremity pain of at ≥6 months' duration (*n*=120)	Lumbar transforaminal epidural injections	Lumbar transforaminal epidural injections	Numeric rating scale, ODI, duration of significant pain relief	Not yet recruiting

No.	Trial number/trial registry	Author/contact and funding body	Aims/objectives	Study design	Study population/target sample size (*n*)	Intervention	Comparison	Outcomes	Recruitment status/ estimated completion date
39	NCT01073995/ ClinicalTrials.gov	Neil Manson, Melissa McKeon Saint John Regional Hospital	To find alternative treatments for lumbar disc herniations other than surgery	RCT	Patients aged 18–65 years diagnosed with lower extremity radiculopathy (sciatica) secondary to a lumbar disc herniation who had failed non-operative measures, medication, modification of daily activities and physiotherapy ($n=100$)	Kenalog and sensorcaine	Placebo	Surgical avoidance	Recruiting/ March 2014
40	NCT01110057/ ClinicalTrials.gov	GlaxoSmithKline GSK Clinical Trials	To evaluate the safety and efficacy of the p38 kinase inhibitor, GW856553, in subjects with neuropathic pain from lumbosacral radiculopathy	RCT	Subjects aged 18–80 years inclusive with a diagnosis of neuropathic pain due to lumbosacral radiculopathy ($n=142$)	GW856553 [(losmapimod) P38 kinase inhibitor]	Placebo	Pain intensity	Recruiting/ August 2010
41	NCT01117870/ ClinicalTrials.gov	Harsha Shanthanna, Philip Chan McMaster University	To assess the efficacy of pulsed radiofrequency for chronic lumbar radicular pain and to assess whether a larger scale clinical study with the same methods can be used	RCT	Patients >18 years of age with chronic lumbar radiculopathy for at least ≥4 months, with concordant findings on either MRI and CT scan and a VAS score of at least 60/100 at presentation ($n=32$)	Pulsed radio-frequency	Placebo	Feasibility of doing a larger scale trial Improvement in ODI Decrease in the analgesic medications used	Not yet recruiting/ August 2011
42	NTR342/Nederlands Trial Register	A. Spijker-Huiges University Medical Center Groningen (UMCG), Department of General Practice	To test the hypothesis that adding segmental steroid injections to usual care in the treatment of acute lumbosacral radicular syndrome will reduce pain and fasten recovery in general practice	RCT	Patients aged between 18 and 60 years who underwent usual medical care for lumbosacral radicular syndrome with insufficient response in 1–2 weeks of treatment ($n=80$)	Care as usual, combined with one or two segmental epidural corticosteroid injections	Care as usual	Pain in back and/ or leg, while walking, standing, lying down and night pain using a numerical rating scale (0–10)	Pending

Appendix 5

Quality assessment of included clinical effectiveness studies

Quality assessment of included clinical effectiveness studies

Type of bias	Abbreviation	Quality assessment question
External validity	EV1	Are the individuals selected to participate in the study likely to be representative of the target population?
	EV2	What percentage of selected individuals agreed to participate?
	EV3	Were staff, places and facilities where the patients were treated, representative of the treatment the majority of patients recorded?
	EVR	Overall external validity rating
Selection bias	SB1	Study design
	SB2	Was the method of randomisation adequate?
	SB3	Was the treatment allocation concealed?
	SB4	Indicate the percentage of relevant prognostic factors that were measured in both groups prior to intervention
	SB5	Were the groups similar at baseline for relevant prognostic factors?
	SB6	Were all participants recruited form same population?
	SB7	Were participants in both groups recruited over the same time (or similar point in their disease/illness/ treatment)?
	SB8	Was an ANCOVA or similar method used to allow for possible baseline imbalance?
	SB9	Were co-interventions avoided or similar?
	SBR	Selection bias confounded
Detection bias	DB1a	Accuracy of data collection tool: (a) were tools shown to be valid?
	DB1b	Accuracy of data collection tool: (b) were tools shown to be reliable?
	DB2	Was the timing of outcome assessment in all groups similar?
	DB3	Were the outcome assessors blinded to the intervention or exposure status of participants?
	DB4	Were data analysts blinded to participant groups?
	DBR	Detection bias rating
Performance bias	PB1	Were the participants blinded to the intervention?
	PB2	Were the physicians blind to the participants groups?
	PB3	Were there any attempts to test the efficiency of blinding the procedures?
	PBR	Overall performance bias rating
Attrition bias	AB1	Were the characteristics of dropouts similar to those who remained in the study?
	AB1a	Was there a different dropout rate between the groups?
	AB2	Indicate the percentage of participates completing the study (if the percentage differs by groups, record the lowest)
	AB3	Is the analysis performed according to intervention allocation status rather than actual intervention received?
	AB4	Did the analysis include all the allocated patients irrespective of non-compliance?
	ABR	Overall attrition bias rating
Global rating	GR	Global rating

Disc surgery (including intraoperative interventions)

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Disc surgery vs active PT/exercise therapy																																
Osterman, 2006[68]	300	?	NR	±	W	RCT	+	+	80–100	+	+	+	+	±	S	+	+	+	NA	?	M	–	–	NA	W	?	–	80–100	+	+	S	M
Disc surgery vs chemonucleolysis																																
Krugluger, 2000[46]	35	?	NR	?	W	RCT	?	?	<60	?	+	+	?	?	W	+	+	+	?	?	M	–	–	NA	W	+	–	80–100	?	?	W	W
van Alphen, 1989[47]	43	+	60–79	+	S	RCT	±	?	<60	?	+	+	-	?	M	–	–	+	–	?	W	–	–	NA	W	+	–	80–100	+	+	S	M
Javid, 1995[48]	44	±	NR	±	M	CCS	–	–	60–79	±	–	+	–	?	W	–	–	+	–	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Postacchini, 1986[49]	45	±	NR	±	M	Non-RCT	–	–	<60	?	–	±	–	–	W	–	–	+	–	?	W	–	–	NA	W	?	–	80–100	–	–	W	W
Norton, 1986[50]	47	–	NR	±	W	CCS	–	–	<60	–	–	+	–	?	W	–	–	?	?	?	W	–	–	NA	W	NA	NA	NA	NA	NA	NA	W
Dabezies, 1978[51]	48	±	NR	±	M	CCS	–	–	<60	?	–	?	–	?	W	–	–	+	–	–	W	–	–	NA	W	?	?	Cannot tell	+	?	W	W
Stula, 1990[52] (German language)	49	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	M	–	–	?	?	?	W	–	–	NA	W	+	–	80–100	–	+	W	W
Tregonning, 1991[53]	61	±	NA	±	M	HCS	–	–	<60	?	–	±	–	?	W	+	+	+	–	?	M	–	–	NA	W	?	–	80–100	+	–	M	W
Lagarrigue, 1991[54] (French language)	117	±	60–79	±	M	CCS	–	–	<60	–	–	+	–	–	W	+	+	±	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Lavignolle, 1987[55] (French language)	129	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	W	±	±	±	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Hoogmartens, 1976[56]	132	±	NR	±	M	HCS	–	–	<60	?	–	–	–	?	W	–	–	–	NA	?	W	–	–	NA	W	NA	NA	NA	NA	NA	NA	W
Zeiger, 1987[58]	150	?	NR	?	W	CCS	–	–	<60	?	?	?	?	?	W	–	–	+	+	?	W	–	–	–	W	NA	?	NA	+	?	W	W
Watts, 1975[59]	160	?	NR	±	W	CCS	–	–	<60	?	–	+	–	?	W	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Crawshaw, 1984[60]	166	±	NR	±	M	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Bouillet, 1983[61]	183	±	NA	+	M	CCS	–	–	<60	–	–	–	–	?	W	–	–	–	–	–	W	–	–	NA	W	NA	NA	NA	NA	NA	NA	W

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Bonafe, 1993[75] (French language)	441	?	NR	±	W	CCS	–	–	< 60	–	?	?	–	?	W	+	+	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Brown, 1989[76]	453	?	NR	±	W	CCS	–	–	< 60	?	–	+	+	?	W	+	+	+	+	?	M	–	–	NA	W	±	+	80–100	–	+	W	W
Buric, 2005[77]	454	?	NR	+	W	Non-RCT	–	–	< 60	–	+	+	–	?	W	+	+	+	NA	–	M	–	–	NA	W	?		80–100	+	+	S	W
Dei-Anang, 1990[79] (German language)	471	?	NR	±	W	CCS	–	–	< 60	?	–	–	–	?	W	–	–	+	?	?	W	–	–	NA	W	NA	NA	NA	NA	NA	NA	W
Muralikuttan, 1992[85]	593	±	60–79	+	M	RCT	+	?	80–100	+	+	+	NA	?	M	+	+	+	?	?	M	–	–	NA	W	?		80–100	+	+	M	M
Revel, 1993[88]	617	?	NR	±	W	RCT	+	?	60–79	±	+	+	–	?	M	+	+	+	?	?	M	–	–	NA	W	–	+	80–100	+	–	W	M
Steffen, 1999[90] (German language)	641	?	NR	±	W	RCT	?	?	< 60	?	+	+	–	?	M	+	+	+	+	?	M	–	–	NA	W	+	–	80–100	+	+	S	W
Weinstein, 1986[92]	672	–	60–79	–	W	CCS	–	–	< 60	–	–	?	–	?	W	+	–	+	NA	?	W	–	–	NA	W	+		80–100	+	–	W	W
Ejeskar, 1983[96]	727	±	NR	±	M	RCT	?	?	< 60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Alexander, 1989[103]	884	±	NR	–	W	CCS	–	–	< 60	?	–	+	–	?	W	+	+	±	?	?	W	NA	NA	NA	W	+	–	80–100	+	+	S	W
Lee, 1996[104] (German language)	889	?	NR	±	W	CCS	–	–	< 60	?	–	+	–	?	W	–	–	+	?	?	W	–	–	NA	W	?	?	Cannot tell	+	?	W	W
Watters,1988[105]	893	±	NR	±	W	Non-RCT	–	–	< 60	?	–	?	–	?	W	–	–	?	–	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Disc surgery vs epidural/intradiscal injection																																
Buttermann, 2004[95]	725	±	80–100	±	M	RCT	?	?	60–79	±	+	+	-	-	M	+	+	?	–	–	W	–	–	NA	W	+		80–100	–	?	W	M
Disc surgery vs intraoperative interventions																																
Aminmansour, 2006[64]	268	±	NR	±	M	Q-RCT	–	–	< 60	?	+	+	–	?	W	+	+	+	+	+	S	+	+	?	M	+	–	80–100	+	+	S	W
MacKay, 1995[65]	270	?	NR	±	W	RCT	?	?	< 60	?	+	+	-	?	M	–	–	+	?	?	W	?	–	?	W	?	?	80–100	+	–	W	W
Lundin, 2003[66]	276	±	80–100	±	M	RCT	?	?	< 60	?	+	+	–	?	M	+	+	+	+	?	M	+	–	?	M	+	–	80–100	+	+	S	M

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Cengiz, 2007[69]	316	?	NR	±	W	RCT	?	+	< 60	?	+	+	+	?	M	+	+	+	?	?	W	?	–	NA	W	+	–	80–100	+	+	S	M
Lavyne, 1992[70]	366	±	NR	±	W	Q-RCT	–	–	< 60	?	+	+	-	+	W	–	–	+	?	?	W	+	–	–	M	–	+	80–100	+	+	M	W
Kim, 2003[73]	400	?	NR	±	W	RCT	+	+	< 60	–	+	+	+	?	M	+	+	+	NA	?	M	+	–	–	M	+	+	80–100	+	+	S	M
Bernsmann, 2001[74]	436	?	NR	±	W	RCT	?	?	< 60	?	+	+	-	?	M	+	+	+	+	?	M	+	–	?	M	?	?	80–100	+	–	W	M
Debi, 2002[78]	470	?	NR	±	W	RCT	?	±	< 60	?	+	+	?	±	M	±	±	+	–	–	W	?	–	–	W	?		80–100	+	–	W	W
Gerszten, 2003[81]	492	?	NR	±	W	RCT	+	?	< 60	?	+	+	–	?	M	+	+	+	NA	?	M	+	+	?	M	+	–	80–100	+	+	S	M
Glasser, 1993[82]	497	?	NR	±	W	RCT	?	?	< 60	?	+	+	–	?	M	–	–	+	?	?	W	+	–	–	M	?	–	60–79	+	–	W	W
Jensen, 1996[83]	520	+	80–100	±	M	RCT	?	?	< 60	?	+	+	–	?	M	+	+	+	+	?	M	+	–	?	M	?	?	80–100	+	–	M	M
Langmayr, 1995[84]	551	±	< 60	±	M	RCT	?	?	< 60	?	+	+	?	?	M	±	±	+	+	?	M	+	+	?	M	?		80–100	+	–	M	M
Richter, 2001[89]	618	?	NR	+	W	RCT	+	+	< 60	?	+	+	–	?	M	+	+	+	+	?	M	+	–	?	M	?	–	80–100	+	–	M	M
Rasmussen, 2008[101]	854	?	NR	±	W	RCT	+	?	< 60	?	+	+	–	?	M	+	+	+	+	?	M	+	–	?	M	+	–	80–100	+	+	S	M
Ronnberg, 2008[102]	856	?	NR	±	W	RCT	?	±	< 60	?	+	+	–	?	M	+	+	+	+	?	M	?	–	?	W	?	?	80–100	+	–	M	W
Jirarattanaphochai, 2007[106]	909	+	80–100	±	M	RCT	+	±	< 60	?	+	+	–	?	M	+	+	+	+	?	M	+	+	?	M	+	–	80–100	+	+	S	M
Tribolet, 1998[107]	915	±	NR	+	M	RCT	+	?	< 60	?	+	+	–	?	M	+	+	+	+	?	M	+	–	?	M	?	+	80–100	+	–	M	M
Disc surgery vs mixed treatments																																
Wang, 2000[63]	263	±	NR	±	M	RCT	?	?	< 60	?	+	+	–	+	M	+	+	+	?	?	M	+	–	?	M	–	?	80–100	+	–	W	M
Hoogland, 2006[97]	734	?	NR	±	W	Q-RCT	–	–	< 60	?	+	+	–	?	W	+	+	+	?	?	M	?	–	NA	W	?	+	80–100	+	–	M	W

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Prestar, 1995[71] (German language)	379	±	NR	±	M	RCT	?	?	< 60	?	+	+	–	?	M	–	–	+	?	?	W	?	–	?	W	?	–	60–79	+	–	W	W
Starkweather, 2006[93]	705	?	NR	±	W	RCT	?	±	60–79	+	–	+	–	?	M	+	+	+	?	?	W	–	–	NA	W	?	+	80–100	+	–	W	W
North, 2005[86]	600	+	60–79	±	M	RCT	+	±	< 60	?	+	+	–	?	M	–	–	+	–	?	W	–	–	NA	W	–	+	60–79	–	–	W	W
Disc surgery vs non-opioids																																
Rossi, 1993[57] (Italian language)	144	?	NR	±	W	RCT	?	?	< 60	?	+	+	–	?	M	–	–	+	+	?	M	–	–	NA	M	+	–	80–100	?	?	W	W
Dubourg, 2002[80]	475	?	NR	+	W	CCS	–	–	60–79	±	–	+	–	?	W	+	+	+	–	?	W	–	–	NA	W	?	?	80–100	+	–	W	W
Disc surgery vs usual/conventional care																																
Thomas, 2007[45]	2	+	60–79	±	S	Non-RCT	–	–	80–100	–	–	+	+	?	W	+	+	–	NA	?	M	–	–	NA	W	+	–	80–100	+	–	M	M
Shvartzman, 1992[62]	211	–	NR	–	W	HCS	–	–	< 60	?	–	+	–	?	W	–	–	+	NA	?	W	–	–	NA	W	NA	NA	NA	NA	NA	NA	W
Koranda, 1995[67] (Czech language)	294	±	NR	±	M	Q-RCT	–	–	< 60	?	–	+	–	?	W	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	–	+	M	W
Atlas, 1996[72]	386	+	NR	+	M	CCS	–	–	80–100	–	+	+	+	?	M	+	+	+	NA	?	M	–	–	NA	W	–		60–79	–	–	M	M
Weber, 1983[91]	664	±	NR	±	M	RCT	?	±	< 60	?	+	+	–	?	M	–	–	+	–	?	W	–	–	NA	W	–	+	60–79	+	–	W	W
Alaranta, 1990[94]	716	±	80–100	±	M	CCS	–	–	60–79	–	–	+	–	?	W	+	+	?	–	–	W	–	–	NA	W	?	–	80–100	–	–	W	W
Weinstein, 2006[99]	751	–	< 60	+	W	RCT	+	+	60–79	+	+	+	+	–	S	+	+	+	NA	?	M	–	–	NA	W	?	+	80–100	+	–	M	S
Hansson, 2007[100]	772	±	< 60	+	M	CCS	–	–	60–79	+	±	+	–	?	W	+	+	+	NA	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Peul, 2007[87]	606	+	80–100	+	S	RCT	+	±	80–100	+	+	+	+	?	S	+	+	+	NA	?	M	–	–	NA	W	+		80–100	+	+	S	S
Weinstein, 2006[98]	750	–	< 60	+	W	CCS	–	–	60–79	–	+	+	+	–	M	+	+	+	NA	?	M	–	–	NA	W	+	+	80–100	+	–	M	M

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Epidural/intradiscal injection

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Epidural vs activity restriction																																
Coomes, 1961[145]	140	?	NR	±	W	Non-RCT	–	–	<60	±	+	+	–	?	W	–	–	+	–	–	W	–	–	NA	W	+		80–100	+	+	S	W
Epidural vs alternative/non-traditional																																
Wehling, 1997[167] (German language)	667	?	NR	±	W	CCS	–	–	<60	?	–	+	–	?	W	–	–	+	–	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Epidural vs biological agents																																
Becker, 2007[149]	321	±	NR	±	W	RCT	+	±	<60	?	+	+	+	+	M	+	+	+	+	?	M	+	–	–	M	?	–	80–100	+	–	M	M
Epidural vs chemonucleolysis																																
Bontoux, 1990[168] (French language)	720	?	NR	±	W	RCT	+	?	<60	?	+	+	–	?	M	–	–	+	+	?	M	+	–	?	M	+	–	80–100	+	+	S	M
Bourgeois, 1988[160] (French language)	447	?	NR	+	W	RCT	+	±	<60	?	+	+	–	?	M	–	–	+	+	?	W	+	+	?	M	+	–	80–100	+	+	S	M
Gallucci, 2007[170]	729	?	NR	±	W	RCT	?	?	<60	?	+	+	?	?	M	±	±	+	+	?	M	+	–	–	M	+		80–100	+	+	S	M
Graham, 1976[144]	50	–	NR	–	W	Non–RCT	–	–	<60	–	?	?	–	?	W	–	–	+	+	?	M	+	–	–	M	NA		80–100	+	+	S	W
Epidural vs disc surgery																																
Buttermann, 2004[95]	725	±	80–100	±	M	RCT	?	?	60–79	±	+	+	–	–	M	+	+	?	–	–	W	–	–	NA	W	+		80–100	–	?	W	M

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Epidural vs education/advice																																
Bronfort, 2004[169]	722	?	< 60	±	W	RCT	?	±	60–79	+	+	+	–	?	M	+	+	+	?	?	W	–	–	NA	W	?	?	80–100	NA	–	W	W
Epidural vs inactive control																																
Bush, 1991[147]	203	?	NR	±	W	RCT	?	?	<60	?	+	+	–	±	M	+	+	+	+	?	M	+	–	NA	M	–	+	60–79	+	+	W	M
Carette, 1997[152]	350	?	NR	+	M	RCT	+	±	80–100	+	+	+	+	+	S	+	+	+	+	?	M	+	+	+	S	–	+	60–79	+	+	M	S
Dilke, 1973[157]	383	?	NR	±	W	RCT	?	?	<60	?	+	+	±	?	M	–	–	+	+	?	M	+	+	–	M	–		60–79	+	–	W	M
Helliwell, 1985[162]	512	?	NR	±	W	RCT	?	?	<60	?	+	+	–	+	M	+	+	+	?	?	M	+	–	–	M	+	–	80–100	+	+	S	M
Karppinen, 2001[171]	739	+	80–100	±	S	RCT	+	±	80–100	±	+	+	+	–	S	+	+	+	+	?	M	+	+	+	S	+		80–100	+	+	S	S
Klenerman, 1984[163]	539	?	NR	±	W	RCT	+	±	<60	?	+	+	?	+	M	±	±	+	+	–	M	?	–	?	W	–		80–100	–	–	W	W
Mathews, 1987[176]	905	±	NR	±	M	RCT	±	?	<60	?	+	+	–	+	M	±	±	+	+	?	M	+	–	?	M	?	+	60–79	+	–	W	M
Price, 2005[173]	778	?	NR	+	M	RCT	+	±	80–100	+	+	+	NA	–	S	+	+	+	+	?	M	+	+	±	S	?		80–100	+	+	S	S
Ridley, 1988[165]	620	?	NR	±	W	RCT	+	?	<60	?	+	+	?	?	M	±	±	+	+	?	M	+	–	–	M	?		80–100	+	–	M	M
Snoek, 1977[148]	240	?	NR	±	W	RCT	?	?	<60	?	+	+	–	±	M	–	–	+	+	?	M	+	–	–	M	+	–	80–100	+	+	S	W
Vad, 2002[158]	406	±	NR	±	W	Non–RCT	–	–	<60	?	+	+	–	±	W	+	+	+	+	?	M	–	–	NA	W	?	+	80–100	+	–	M	M
Valat, 2003[153]	351	?	NR	±	W	RCT	+	±	80–100	+	+	+	NA	+	S	+	+	+	+	?	M	+	–	–	M	?		80–100	+	+	S	S
Yates, 1978[146]	175	?	NR	±	W	RCT (crossover)	?	?	<60	?	+	+	–	?	W	–	–	+	?	?	W	+	–	NA	M	?	?	Can't tell	+	?	W	W

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Epidural vs manipulation																															
Bronfort, 2004[169]	722	?	<60	±	W	RCT	?	±	60–79	+	+	+	–	?	M	+	+	+	?	?	W	–	–	NA	W	?	?	80–100	NA	–	W	W
Bronfort, 2000[161]	451	–	<60	±	W	RCT	?	±	60–79	–	+	+	NA	?	M	+	+	+	NA	?	M	–	–	NA	W	?		80–100	+	–	M	M
Epidural vs mixed treatment																															
Styczynski, 1997[166] (Polish language)	644	?	NR	±	W	Non-RCT	–	–	<60	?	?	?	–	?	W	+	+	+	?	?	W	+	+	NA	W	+	–	80–100	+	+	S	W
Blonna, 2004[159] (Italian language)	439	±	NR	±	M	RCT	?	±	<60	–	+	+	–	?	M	+	+	?	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Pirbudak, 2003[150]	348	?	NR	±	W	RCT	±	±	<60	?	+	+	–	?	M	+	+	+	+	?	M	+	+	–	M	+	–	80–100	+	+	S	M
Epidural vs non-opioids																															
Bronfort, 2000[161]	451	–	<60	±	W	RCT	?	±	60–79	–	+	+	NA	?	M	+	+	+	NA	?	M	–	–	NA	W	?		80–100	+	–	M	M
Dincer, 2007[143]	20	+	NR	±	M	RCT	?	?	60–79	+	+	+	NA	+	M	+	+	+	+	–	M	–	–	–	W	+		80–100	+	+	S	M
Lafuma, 1997[172]	771	?	NR	+	W	RCT	?	?	60–79	+	+	+	–	+	M	+	+	+	–	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Wilson-MacDonald, 2005[156]	362	?	NR	±	W	RCT	+	±	60–79	±	+	+	–	?	M	+	+	+	?	–	M	+	–	–	M	?		80–100	+	–	M	M
Murata, 2009[175]	846	?	NR	+	W	RCT	?	±	<60	?	+	+	–	+	M	+	+	+	?	?	W	?	–	?	W	+	?	80–100	+	?	M	W

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Epidural vs passive PT																																
Veihelmann, 2006[155]	359	?	NR	±	W	RCT	±	+	<60	?	+	+	–	?	M	+	+	+	+	?	M	–	–	NA	W	–	+	<60	+	–	W	M
Epidural vs usual/conventional care																																
Buchner, 2000[151]	349	?	NR	±	W	RCT	±	±	60–79	+	+	+	NA	?	M	+	+	+	?	?	M	–	–	NA	W	+	+	80–100	+	+	S	M
Laiq, 2009[174]	828	?	NR	±	W	Q-RCT	–	–	<60	?	±	+	–	?	W	+	+	+	–	?	W	–	–	NA	W	+	–	80–100	+	–	M	W
Matyjek, 1986 (Polish language)[164]	581	?	NR	±	W	CCS	–	–	<60	?	?	?	–	?	W	–	–	?	?	?	W	–	–	NA	W	NA	NA	NA	NA	NA	NA	W
Popiolek, 1991 (Polish language)[154]	358	?	NR	±	W	Non-RCT	?	?	60–79	–	+	+	–	–	W	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Chemonucleolysis

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Chemonucleolysis vs disc surgery																																
Krugluger, 2000[46]	35	?	NR	?	W	RCT	?	?	<60	?	+	+	?	?	W	+	+	+	?	?	M	–	–	NA	W	+	–	80–100	?	?	W	W
van Alphen, 1989[47]	43	+	60–79	+	S	RCT	±	?	<60	?	+	+	–	?	M	–	–	+	–	?	W	–	–	NA	W	+	–	80–100	+	+	S	M
Javid, 1995[48]	44	±	NR	±	M	CCS	–	–	60–79	±	–	+	–	?	W	–	–	+	–	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Postacchini, 1986[49]	45	±	NR	±	M	Non-RCT	–	–	<60	?	–	±	–	–	W	–	–	+	–	?	W	–	–	NA	W	?	–	80–100	–	–	W	W
Norton, 1986[50]	47	–	NR	±	W	CCS	–	–	<60	–	–	+	–	?	W	–	–	?	?	?	W	–	–	NA	W	NA	NA	NA	NA	NA	NA	W
Dabezies, 1978[51]	48	±	NR	±	M	CCS	–	–	<60	?	–	?	–	?	W	–	–	+	–	–	W	–	–	NA	W	?	?	Cannot tell	+	?	W	W
Stula, 1990[52] (German language)	49	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	M	–	–	?	?	?	W	–	–	NA	W	+	–	80–100	–	+	W	W
Tregonning, 1991[53]	61	±	NA	±	M	HCS	–	–	<60	?	–	±	–	?	W	+	+	+	–	?	M	–	–	NA	W	?	–	80–100	+	–	M	W
Lagarrigue, 1991[54] (French language)	117	±	60–79	±	M	CCS	–	–	<60	–	–	+	–	–	W	+	+	±	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Lavignolle, 1987[55] (French language)	129	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	W	±	±	±	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Hoogmartens, 1976[56]	132	±	NR	±	M	HCS	–	–	<60	?	–	–	–	?	W	–	–	–	NA	?	W	–	–	NA	W	NA	NA	NA	NA	NA	NA	W
Zeiger, 1987[58]	150	?	NR	?	W	CCS	–	–	<60	?	?	?	?	?	W	–	–	+	+	?	W	–	–	–	W	NA	?	NA	+	?	W	W
Watts, 1975[59]	160	?	NR	±	W	CCS	–	–	<60	?	–	+	–	?	W	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Crawshaw, 1984[60]	166	±	NR	±	M	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Bouillet, 1983[61]	183	±	NA	+	M	CCS	–	–	<60	–	–	–	–	?	W	–	–	–	–	–	W	–	–	NA	W	NA	NA	NA	NA	NA	NA	W

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Bonafe, 1993[75] (French language)	441	?	NR	±	W	CCS	–	–	<60	–	?	?	–	?	W	+	+	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Brown, 1989[76]	453	?	NR	±	W	CCS	–	–	<60	?	–	+	+	?	W	+	+	+	+	?	M	–	–	NA	W	±	+	80–100	–	+	W	W
Buric, 2005[77]	454	?	NR	+	W	Non-RCT	–	–	<60	–	+	+	–	?	W	+	+	+	NA	–	M	–	–	NA	W	?	–	80–100	+	+	S	W
Dei–Anang, 1990[79] (German language)	471	?	NR	±	W	CCS	–	–	<60	?	–	–	–	?	W	–	–	+	?	?	W	–	–	NA	W	NA	NA	NA	NA	NA	NA	W
Muralikuttan, 1992[85]	593	±	60–79	+	M	RCT	+	?	80–100	+	+	+	NA	?	M	+	+	+	?	?	M	–	–	NA	W	?	–	80–100	+	+	M	M
Revel, 1993[88]	617	?	NR	±	W	RCT	+	?	60–79	±	+	+	–	?	M	+	+	+	?	?	M	–	–	NA	W	–	+	80–100	+	–	W	M
Steffen, 1999[90] (German language)	641	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	M	+	+	+	+	?	M	–	–	NA	W	+	–	80–100	+	+	S	W
Weinstein, 1986[92]	672	–	60–79	–	W	CCS	–	–	<60	–	–	?	–	?	W	+	–	+	NA	?	W	–	–	NA	W	+	–	80–100	+	–	W	W
Ejeskar, 1983[96]	727	±	NR	±	M	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Alexander, 1989[103]	884	±	NR	–	W	CCS	–	–	<60	?	–	+	–	?	W	+	+	±	?	?	W	NA	NA	NA	W	+	–	80–100	+	+	S	W
Lee, 1996[104] (German language)	889	?	NR	±	W	CCS	–	–	<60	?	–	+	–	?	W	–	–	+	?	?	W	–	–	NA	W	?	?	Cannot tell	+	?	W	W
Watters, 1988[105]	893	±	NR	±	W	Non-RCT	–	–	<60	?	–	–	–	?	W	–	–	–	–	?	W	–	–	NA	W	+	–	80–100	+	+	S	W

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Chemonucleolysis vs epidural/intradiscal injection																																
Graham, 1976[144]	50	–	NR	–	W	Non-RCT	–	–	<60	–	?	?	–	?	W	–	–	+	+	?	M	+	–	–	M	NA		80–100	+	+	S	W
Bourgeois, 1988[160] (French language)	447	?	NR	+	W	RCT	+	±	<60	?	+	+	–	?	M	–	–	+	+	?	W	+	+	?	M	+	–	80–100	+	+	S	M
Bontoux, 1990[168] (French language)	720	?	NR	±	W	RCT	+	?	<60	?	+	+	–	?	M	–	–	+	+	?	M	+	–	?	M	+	–	80–100	+	+	S	M
Gallucci, 2007[170]	729	?	NR	±	W	RCT	?	?	<60	?	+	+	?	?	M	±	±	+	+	?	M	+	–	–	M	+		80–100	+	+	S	M
Chemonucleolysis vs inactive control																																
Gogan, 1992[205]	55	±	NR	+	M	RCT	+	?	60–79	±	+	+	–	?	M	+	+	+	+	?	M	?	–	–	W	?	±	80–100	+	–	M	M
Schwetschenau, 1976[206]	236	±	<60	–	M	RCT	+	+	60–79	±	+	+	–	?	M	–	–	+	+	?	M	+	+	?	M	+	–	80–100	+	+	S	S
Feldman, 1986[207] (French language)	244	±	NR	±	M	RCT	?	?	80–100	±	+	+	–	?	M	+	+	+	?	?	M	+	?	–	M	?	?	80–100	+	+	M	M
Dabezies, 1988[209]	726	?	NR	+	W	RCT	±	+	<60	?	+	+	–	?	M	–	–	+	+	?	M	+	+	?	M	?	+	60–79	+	–	W	M
Javid, 1983[210]	738	?	NR	+	W	RCT	+	±	<60	?	+	+	–	?	M	–	–	+	+	±	M	+	+	?	M	+	–	80–100	+	–	S	M
Chemonucleolysis vs manipulation																																
Burton, 2000[208]	723	?	NR	+	W	RCT	–	–	80–100	+	+	+	NA	?	M	+	+	+	+	+	S	–	–	NA	W	±		60–79	+	–	M	M
Chemonucleolysis vs mixed treatments																																
Khoromi, 2007[214]	534	±	80–100	+	S	RCT (crossover)	+	+	80–100	+	+	+	+	+	S	+	+	+	+	?	M	+	+	+	S	?	+	<60	+	–	W	M

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Non-opioids vs alternative/non-traditional																																
Chen, 2009[215]	801	±	NR	±	M	RCT	?	?	< 60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Non-opioids vs biological agents																																
Geneway, 2004[216]	323	±	80–100	±	M	HCS	–	–	60–79	±	–	–	–	?	W	+	+	+	–	?	W	–	–	–	W	+	–	80–100	+	+	S	W
Non-opioids vs disc surgery																																
Rossi, 1993[57] (Italian language)	144	?	NR	±	W	RCT	?	?	< 60	?	+	+	–	?	M	–	–	+	+	?	M	–	–	NA	M	+	–	80–100	?	?	W	W
Dubourg, 2002[80]	475	?	NR	+	W	CCS	–	–	60–79	±	–	+	–	?	W	+	+	+	–	?	W	–	–	NA	W	?	?	80–100	+	–	W	W
Non-opioids vs epidural/intradiscal injection																																
Dincer, 2007[143]	20	+	NR	±	M	RCT	?	?	60–79	+	+	+	NA	+	M	+	+	+	+	–	M	–	–	–	W	+		80–100	+	+	S	M
Wilson-MacDonald, 2005[156]	362	?	NR	±	W	RCT	+	±	60–79	±	+	+	–	?	M	+	+	?	?	–	M	+	–	–	M	?		80–100	+	–	M	M
Bronfort, 2000[161]	451	–	< 60	±	W	RCT	?	±	60–79	–	+	+	NA	?	M	+	+	+	NA	?	M	–	–	NA	W	?		80–100	+	–	M	M
Lafuma, 1997[172]	771	?	NR	+	W	RCT	?	?	60–79	+	+	+	–	+	M	+	+	+	–	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Murata, 2009[175]	846	?	NR	+	W	RCT	?	±	< 60	?	+	+	–	+	M	+	+	+	?	?	W	?	–	?	W	+	?	80–100	+	?	M	W

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Non-opioids vs inactive control																																
Gibson, 1975[217]	62	?	NR	±	W	Non-RCT	–	–	<60	?	+	+	?	±	W	–	–	+	?	?	W	+	+	–	M	?		80–100	?	?	M	W
Goldie, 1968[218]	97	?	NR	?	W	RCT	?	+	<60	?	+	+	–	+	M	–	–	+	+	?	W	+	+	–	M	+	–	80–100	+	+	S	M
Yildirim, 2003[219]	297	?	NR	±	W	RCT	?	?	<60	?	+	+	–	+	M	–	–	+	?	?	W	+	?	?	M	–	+	80–100	+	–	W	W
Hedeboe, 1982[220]	312	±	80–100	±	M	RCT	±	±	60–79	+	+	+	–	?	M	–	–	+	+	?	W	+	+	–	M	+	–	80–100	–	+	M	M
El-Zahaar, 1995[221]	334	?	NR	?	W	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	+	?	W	+	?	–	M	+	–	80–100	+	+	S	W
Khoromi, 2007[214]	534	±	80–100	+	S	RCT (crossover)	+	+	80–100	+	+	+	+	+	S	+	+	+	+	?	M	+	+	+	S	?	+	<60	+	–	W	M
Porsman, 1979[222]	611	±	NR	+	M	RCT	?	+	<60	?	+	+	–	+	M	–	–	+	+	+	M	+	+	?	M	?	–	80–100	+	–	M	W
Weber, 1993[6]	665	?	NR	?	W	RCT	?	?	<60	?	+	+	–	+	M	+	+	+	–	?	W	+	+	–	M	+	–	80–100	+	+	S	M
Dreiser, 2001[223]	696	?	NR	?	W	RCT	?	?	60–79	+	+	+	+	±	M	+	+	+	+	?	M	+	+	–	S	+	–	80–100	+	+	S	M
Finckh, 2006[224]	728	?	NR	±	W	RCT	+	±	60–79	+	+	+	+	+	S	+	+	+	+	?	M	+	+	?	M	?	–	80–100	+	+	M	M
Grevsten, 1975[225]	732	?	NR	±	W	RCT	?	?	<60	?	+	+	–	+	M	–	–	+	+	?	W	+	+	–	M	+	+	80–100	+	+	S	W
Jacobs, 1968[226]	736	?	NR	+	W	Q-RCT	–	?	<60	?	+	+	?	+	W	–	–	+	+	–	M	+	–	?	M	–		80–100	+	–	W	W
Herrmann, 2009[227]	816	?	NR	+	W	RCT	+	+	60–79	+	+	+	–	?	S	+	+	+	?	?	M	+	+	?	M	+	–	80–100	+	+	S	M
Holve, 2008[28]	817	?	NR	±	W	Q-RCT	–	±	<60	?	+	+	–	?	W	+	+	+	+	?	M	+	+	?	M	?	+	80–100	+	–	M	M

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Non-opioids vs manipulation																																
Bronfort, 2000[161]	451	–	< 60	±	W	RCT	?	±	60–79	–	+	+	NA	?	M	+	+	+	NA	?	M	–	–	NA	W	?	–	80–100	+	–	M	M
Non-opioids vs mixed treatments																																
Khoromi, 2007[214]	534	±	80–100	+	S	RCT (crossover)	+	+	80–100	+	+	+	+	+	S	+	+	+	+	?	M	+	+	+	S	?	+	< 60	+	+	W	M
Non-opioids vs opioids																																
Kwasucki, 2002[229] (Polish language)	368	?	NR	±	W	RCT	?	?	< 60	?	+	+	–	+	M	?	?	+	?	?	W	?	?	?	W	+	–	80–100	+	+	S	W
Kwasucki, 1993[230] (Polish language)	547	?	NR	±	W	RCT	?	?	< 60	?	+	+	–	?	M	±	±	+	?	?	W	?	?	?	W	+	–	80–100	+	+	S	W

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Traction

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Traction vs active PT/exercise therapy																																
Ljunggren, 1992[242]	570	?	NR	±	W	RCT	?	?	60–79	+	+	+	–	+	M	+	+	+	+	?	M	–	–	NA	W	+	–	80–100	+	+	S	M
Traction vs activity restriction																																
Moret, 1998[243]	222	+	80–100	±	S	RCT	+	±	60–79	±	+	+	–	+	M	+	+	+	–	?	M	–	–	NA	W	+	–	80–100	+	+	S	M
Traction vs inactive control																																
Pal, 1986[244]	206	?	NR	?	W	RCT	?	?	<60	±	+	+	–	?	W	±	±	+	+	–	M	+	–	–	M	?		80–100	+	–	M	W
Rattanatharn, 2004[245]	299	?	NR	+	W	RCT	+	±	60–79	–	+	+	+	+	M	+	+	+	NA	?	M	+	–	–	M	?	+	60–79	+	–	W	M
Larsson, 1980[246]	553	?	NR	+	W	RCT	?	?	60–79	±	+	+	–	+	M	–	–	+	?	?	W	–	–	NA	W	+	+	80–100	+	–	M	M
Mathews, 1975[247]	579	?	NR	±	W	RCT	?	?	<60	±	+	+	–	?	M	–	–	+	?	–	W	+	–	–	M	?		Cannot tell	+	?	W	W
Reust, 1988[248] (French language)	746	?	NR	±	W	RCT	+	?	<60	?	+	+	–	+	M	+	+	+	+	?	M	+	–	?	M	+	+	<60	+	+	W	M

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Traction vs passive PT																															
Styczynski, 1991[250] (Polish language)	77	?	NR	±	W	Non-RCT	–	–	<60	?	+	+	–	+	W	–	–	+	?	?	W	–	–	NA	W	?	+	80–100	+	–	M	W
Unlu, 2008[249]	148	?	NR	±	W	RCT	?	?	60–79	+	+	+	NA	+	M	+	+	+	+	?	M	–	–	NA	W	+	–	80–100	+	+	S	M
Mixed treatments (including traction) vs active PT/exercise therapy																															
Lidstrom, 1970[256]	564	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Mixed treatments (including traction) vs activity restriction																															
Lidstrom, 1970[256]	564	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Manipulation

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Manipulation vs chemonucleolysis																																
Burton, 2000[208]	723	?	NR	+	W	RCT	–	–	80–100	+	+	+	NA	?	M	+	+	+	+	+	S	–	–	NA	W	±		60–79	+	–	M	M
Manipulation vs education/advice																																
Bronfort, 2004[169]	722	?	<60	±	W	RCT	?	±	60–79	+	+	+	–	?	M	+	+	+	?	?	W	–	–	NA	W	?	?	80–100	NA	–	W	W
Manipulation vs epidural																																
Bronfort, 2000[161]	451	–	<60	±	W	RCT	?	±	60–79	–	+	+	NA	?	M	+	+	+	NA	?	M	–	–	NA	W	?		80–100	+	–	M	M
Bronfort, 2004[169]	722	?	<60	±	W	RCT	?	±	60–79	+	+	+	–	?	M	+	+	+	?	?	W	–	–	NA	W	?	?	80–100	NA	–	W	W
Manipulation vs inactive control																																
Santilli, 2006[258]	52	+	80–100	+	S	RCT	+	+	<60	+	+	+	NA	?	S	?	±	+	+	?	S	+	–	–	M	+		80–100	+	–	S	S
Manipulation vs non-opioids																																
Bronfort, 2000[161]	451	–	<60	±	W	RCT	?	±	60–79	–	+	+	NA	?	M	+	+	+	NA	?	M	–	–	NA	W	?		80–100	+	–	M	M

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Alternative therapies

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Alternative vs epidural/intradiscal injection																															
Wehling, 1997[167] (German language)	667	?	NR	±	W	CCS	–	–	<60	?	–	+	–	?	W	–	–	+	–	?	W	+	–	NA	W	+	–	80–100	+	+	S	W
Alternative vs inactive control																															
Duplan, 1983[261] (French language)	476	±	80–100	±	M	RCT	?	?	<60	?	+	+	–	+	M	+	+	+	+	?	M	+	–	?	M	–	+	80–100	+	?	M	M
Alternative vs non-opioids																															
Chen, 2009[215]	801	±	NR	±	M	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Active physical therapy/exercise therapy

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Exercise therapy vs activity restriction																																
Lidstrom, 1970[256]	564	?	NR		W	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Exercise therapy vs disc surgery																																
Osterman, 2006[68]	300	?	NR	±	W	RCT	+	+	80–100	+	+	+	+	±	S	+	+	+	NA	?	M	–	–	NA	W	?	–	80–100	+	+	S	M
Exercise therapy vs inactive control																																
Gerszten, 2003[81]	492	?	NR	±	W	RCT	+	?	<60	?	+	+	–	?	M	+	+	+	NA	?	M	+	+	?	M	+	–	80–100	+	+	S	M
Exercise therapy vs mixed treatments																																
Fritz, 2007[255]	395	?	NR	+	W	RCT	+	±	80–100	+	+	+	+	+	S	+	+	+	±	?	M	–	–	NA	W	±	+	80–100	+	+	M	M
Lidstrom, 1970[256]	564	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Exercise therapy vs traction																																
Ljunggren, 1992[242]	570	?	NR	±	W	RCT	?	?	60–79	+	+	+	–	+	M	+	+	+	+	?	M	–	–	NA	W	+	–	80–100	+	+	S	M
Exercise therapy vs usual/conventional care																																
Luijsterburg, 2008[264]	742	+	80–100	+	S	RCT	+	+	80–100	+	+	+	NA	+	S	+	+	+	NA	?	M	–	–	NA	W	?		80–100	+	+	M	S

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Passive physical therapy

Study	ID no.	EV1	EV2	EV3	EVR	SB1	SB2	SB3	SB4	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Passive PT vs epidural/intradiscal injection																																
Veihelmann, 2006[155]	359	?	NR	±	W	RCT	±	+	<60	?	+	+	–	?	M	+	+	+	+	?	M	–	–	NA	W	–	+	<60	+	–	W	M
Passive PT vs inactive control																																
Ghoname, 1999[268]	496	?	NR	?	W	RCT (crossover)	?	?	<60	±	+	+	?	?	M	+	+	+	NA	?	M	–	–	NA	W	?		Cannot tell	+	?	W	W
Passive PT vs mixed treatments																																
Bokonjic, 1975[269] (German language)	354	?	NR	±	W	Non-RCT	–	–	<60	?	?	+	–	?	W	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Passive PT vs traction																																
Unlu, 2008[249]	148	?	NR	±	W	RCT	?	?	60–79	+	+	+	NA	+	M	+	+	+	+	?	M	–	–	NA	W	+		80–100	+	+	S	M
Ozturk, 2006[253]	266	?	NR	±	W	RCT	?	?	<60	–	+	+	–	?	W	±	±	+	?	?	W	–	–	NA	W	+		80–100	+	+	S	W

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak

Biological agents

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Biological agents vs epidural/Intradiscal injection																																
Becker, 2007[149]	321	±	NR	±	W	RCT	+	±	< 60	?	+	+	+	+	M	+	+	+	+	?	M	+	–	–	M	?	–	80–100	+	–	M	M
Biological agents vs inactive control																																
Karppinen, 2003[270]	398	?	NR	±	W	Non-RCT	–	–	< 60	?	–	–	+	?	W	+	+	–	–	?	M	–	–	NA	W	?	?	Cannot tell	+	?	W	W
Korhonen, 2005[271]	741	?	NR	±	W	RCT	+	?	60–79	+	+	+	+	?	S	+	+	+	?	?	M	+	?	?	M	+	–	80–100	+	+	S	M
Biological agents vs non-opioids																																
Genevay, 2004[216]	323	±	80–100	±	M	HCS	–	–	60–79	±	–	–	–	?	W	+	+	+	–	?	W	–	–	–	W	+	–	80–100	+	+	S	W

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Activity restriction

Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Activity restriction vs exercise therapy																																
Lidstrom, 1970[256]	564	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Activity restriction vs education/advice																																
Hofstee, 2002[257]	713	±	80–100	+	M	RCT	+	–	60–79	+	+	+	+	±	M	+	+	+	–	?	W	–	–	NA	W	?	–	80–100	+	+	M	M
Vroomen, 1999[14]	658	+	80–100	+	S	RCT	+	–	60–79	±	+	+	+	+	M	+	+	+	+	+	S	–	–	NA	W	+		80–100	+	+	S	M
Activity restriction vs epidural/intradiscal injection																																
Coomes, 1961[145]	140	?	NR	±	W	Non-RCT	–	–	<60	±	+	+	–	?	W	–	–	+	–	–	W	–	–	NA	W	+		80–100	+	+	S	W
Activity restriction vs mixed treatments																																
Hofstee, 2002[257]	713	±	80–100	+	M	RCT	+	–	60–79	+	+	+	+	±	M	+	+	+	–	?	W	–	–	NA	W	?	–	80–100	+	+	M	M
Lidstrom, 1970[256]	564	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	M	–	–	+	?	?	W	–	–	NA	W	+	–	80–100	+	+	S	W
Activity restriction vs traction																																
Moret, 1998[243]	222	+	80–100	±	S	RCT	+	±	60–79	±	+	+	–	+	M	+	+	+	–	?	M	–	–	NA	W	+	–	80–100	+	+	S	M

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Opioids

Study	IID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Opioids vs non-opioids																															
Kwasucki, 2002[229] (Polish language)	368	?	NR	±	W	RCT	?	?	<60	?	+	+	–	+	M	?	?	+	?	?	W	?	?	?	W	+	–	80–100	+	+	S	W
Kwasucki, 1993[230] (Polish language)	547	?	NR	±	W	RCT	?	?	<60	?	+	+	–	?	M	±	±	+	?	?	W	?	?	?	W	+	–	80–100	+	+	S	W
Khoromi, 2007[214]	534	±	80–100	+	S	RCT (crossover)	+	+	80–100	+	+	+	+	+	S	+	+	+	+	?	M	+	+	+	S	?	+	<60	+	–	W	M
Opioids vs mixed treatments																															
Khoromi, 2007[214]	534	±	80–100	+	S	RCT (crossover)	+	+	80–100	+	+	+	+	+	S	+	+	+	+	?	M	+	+	+	S	?	+	<60	+	–	W	M

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

Education/advice

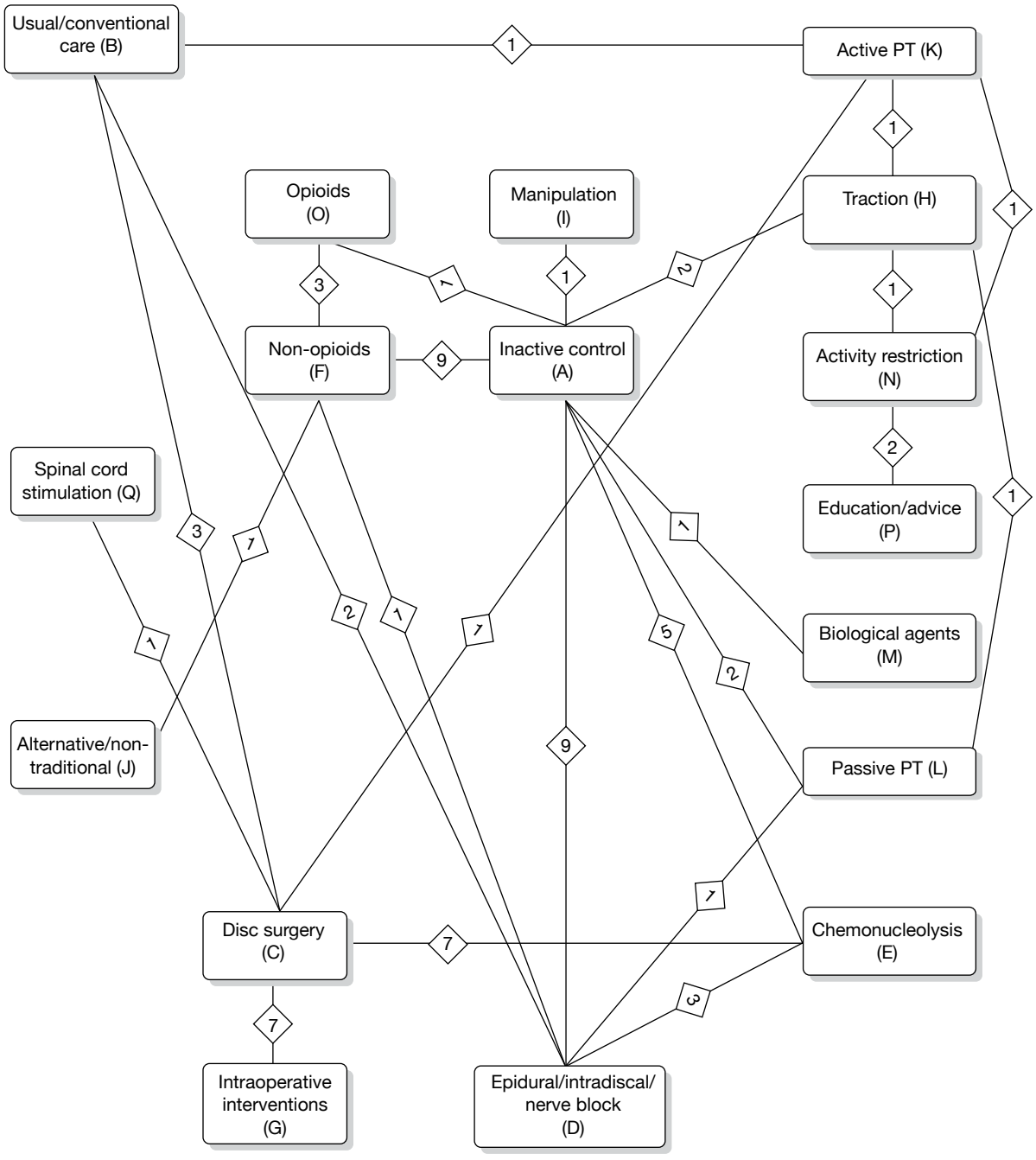
Study	ID no.	EV1	EV2 (%)	EV3	EVR	SB1	SB2	SB3	SB4 (%)	SB5	SB6	SB7	SB8	SB9	SBR	DB1a	DB1b	DB2	DB3	DB4	DBR	PB1	PB2	PB3	PBR	AB1	AB1a	AB2 (%)	AB3	AB4	ABR	GR
Education/advice vs activity restriction																																
Vroomen, 1999[14]	658	+	80–100	+	S	RCT	+	–	60–79	±	+	+	+	+	M	+	+	+	+	+	S	–	–	NA	W	+	–	80–100	+	+	S	M
Hofstee, 2002[267]	713	±	80–100	+	M	RCT	+	–	60–79	+	+	+	+	±	M	+	+	+	–	?	W	–	–	NA	W	?	–	80–100	+	+	M	M
Education/advice vs epidural/intradiscal injection																																
Bronfort, 2004[169]	722	?	< 60	±	W	RCT	?	±	60–79	+	+	+	–	?	M	+	+	+	?	?	W	–	–	NA	W	?	?	80–100	NA	–	W	W
Education advice vs manipulation																																
Bronfort, 2004[169]	722	?	< 60	±	W	RCT	?	±	60–79	+	+	+	–	?	M	+	+	+	?	?	W	–	–	NA	W	?	?	80–100	NA	–	W	W
Education advice vs mixed treatments																																
Hofstee, 2002[267]	713	±	80–100	+	M	RCT	+	–	60–79	+	+	+	+	±	M	+	+	+	–	?	W	–	–	NA	W	?	–	80–100	+	+	M	M

–, no; ±, partial; +, yes; ?, unclear; M, moderate; NA, not applicable; NR, not reported; S, strong; W, weak.

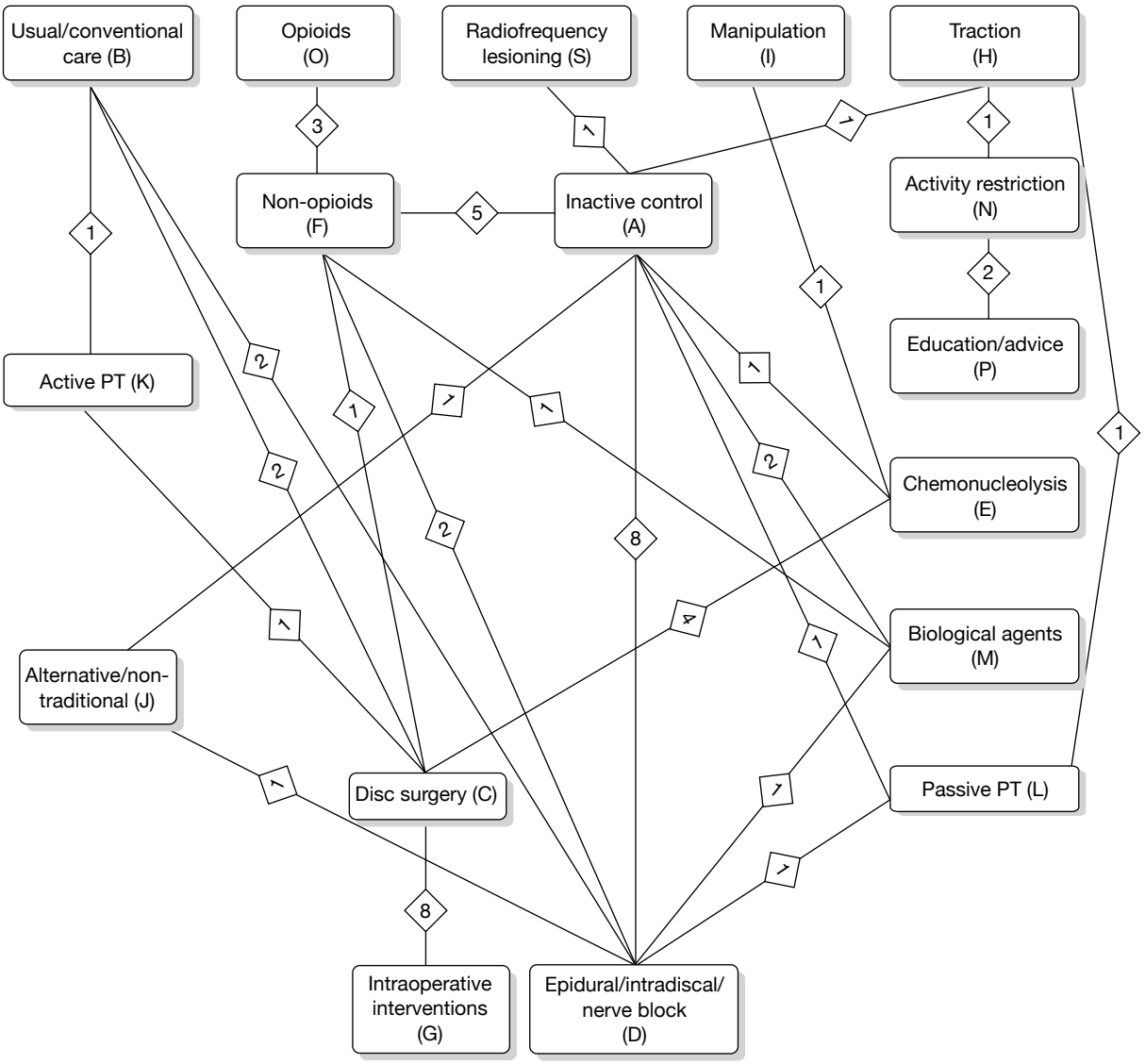
Appendix 6

Network diagrams

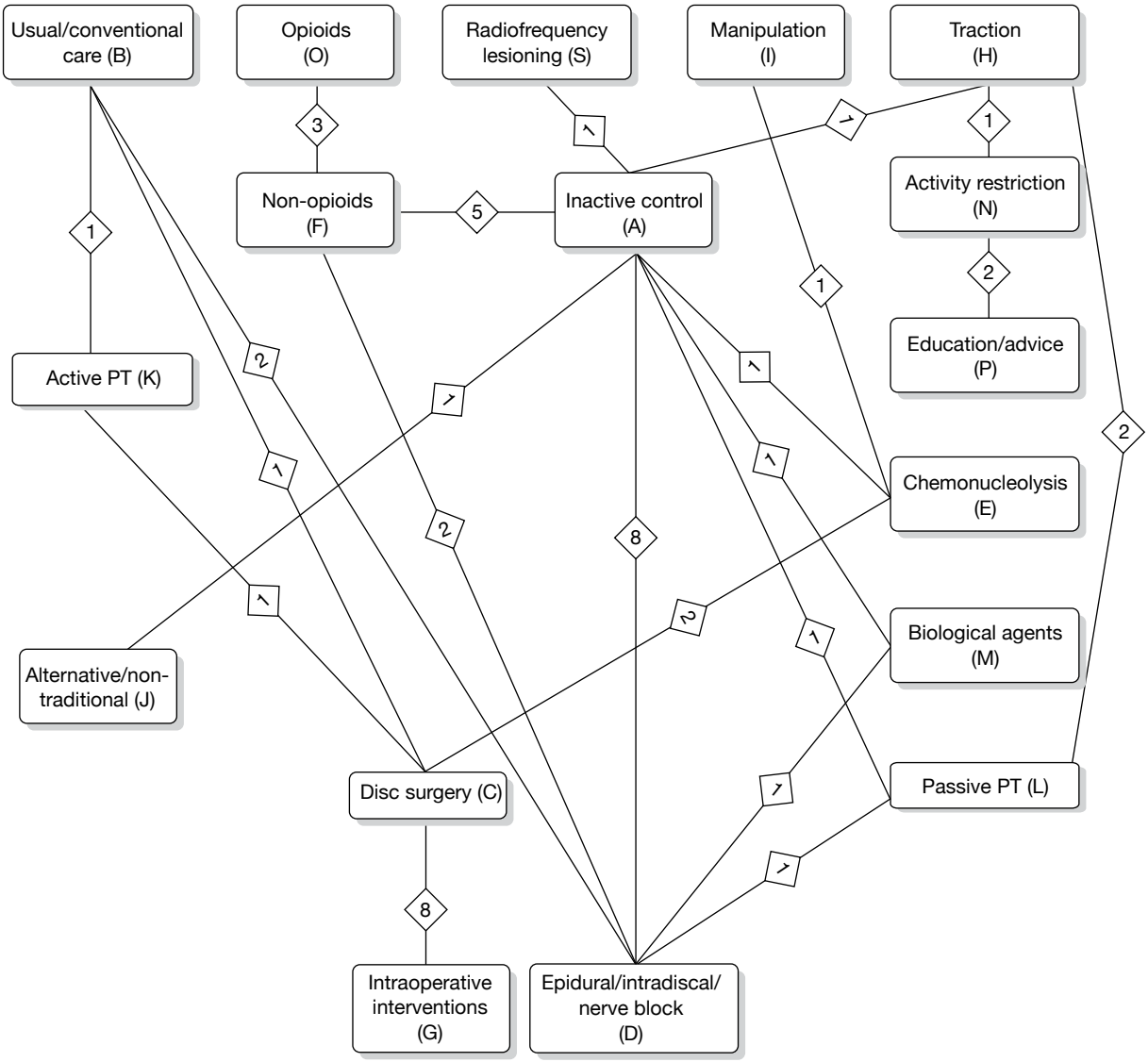
Global effect mixed treatment comparison network for randomised controlled trials and quasi-randomised controlled trials



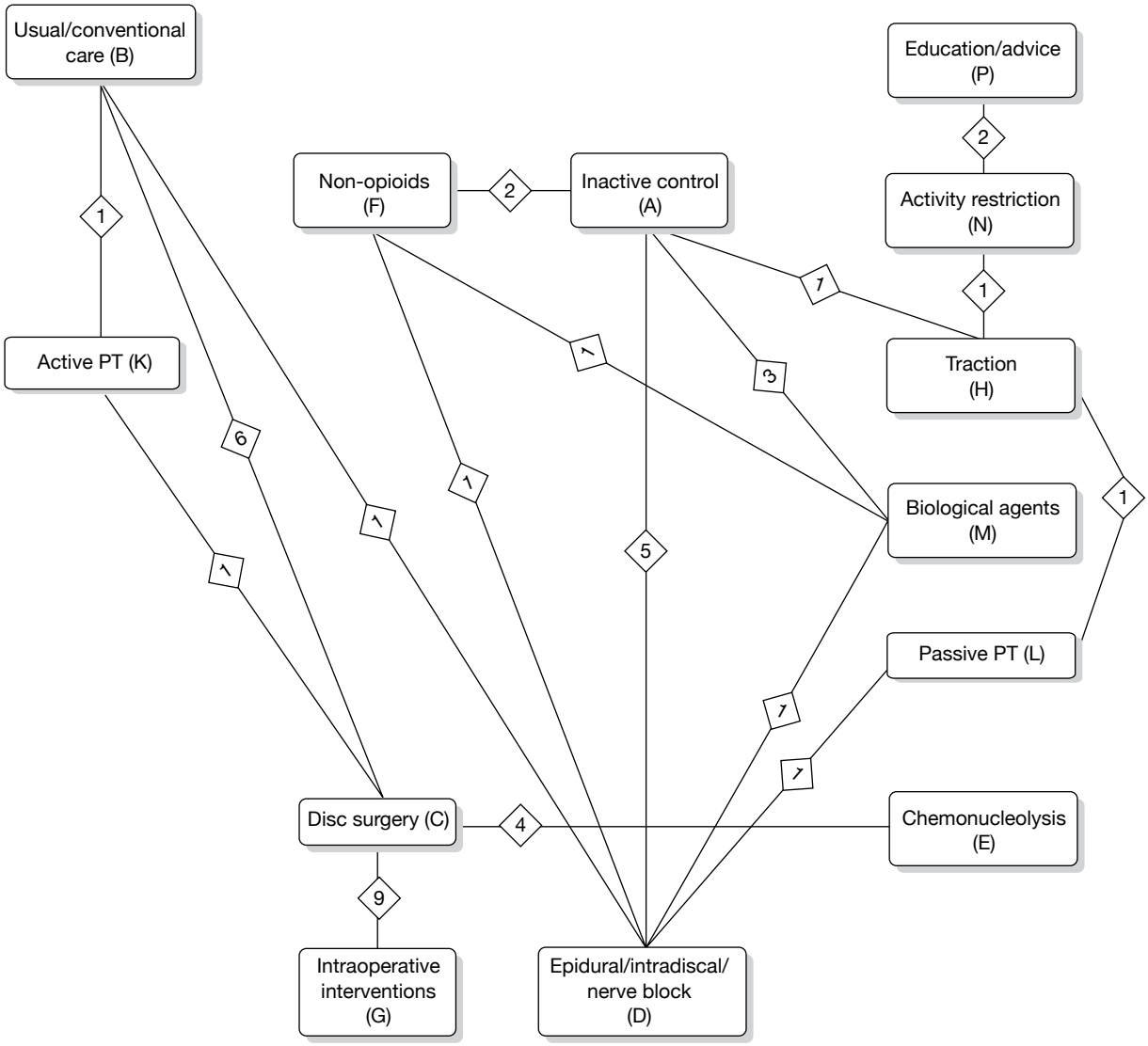
Pain mixed treatment comparison network for all study designs



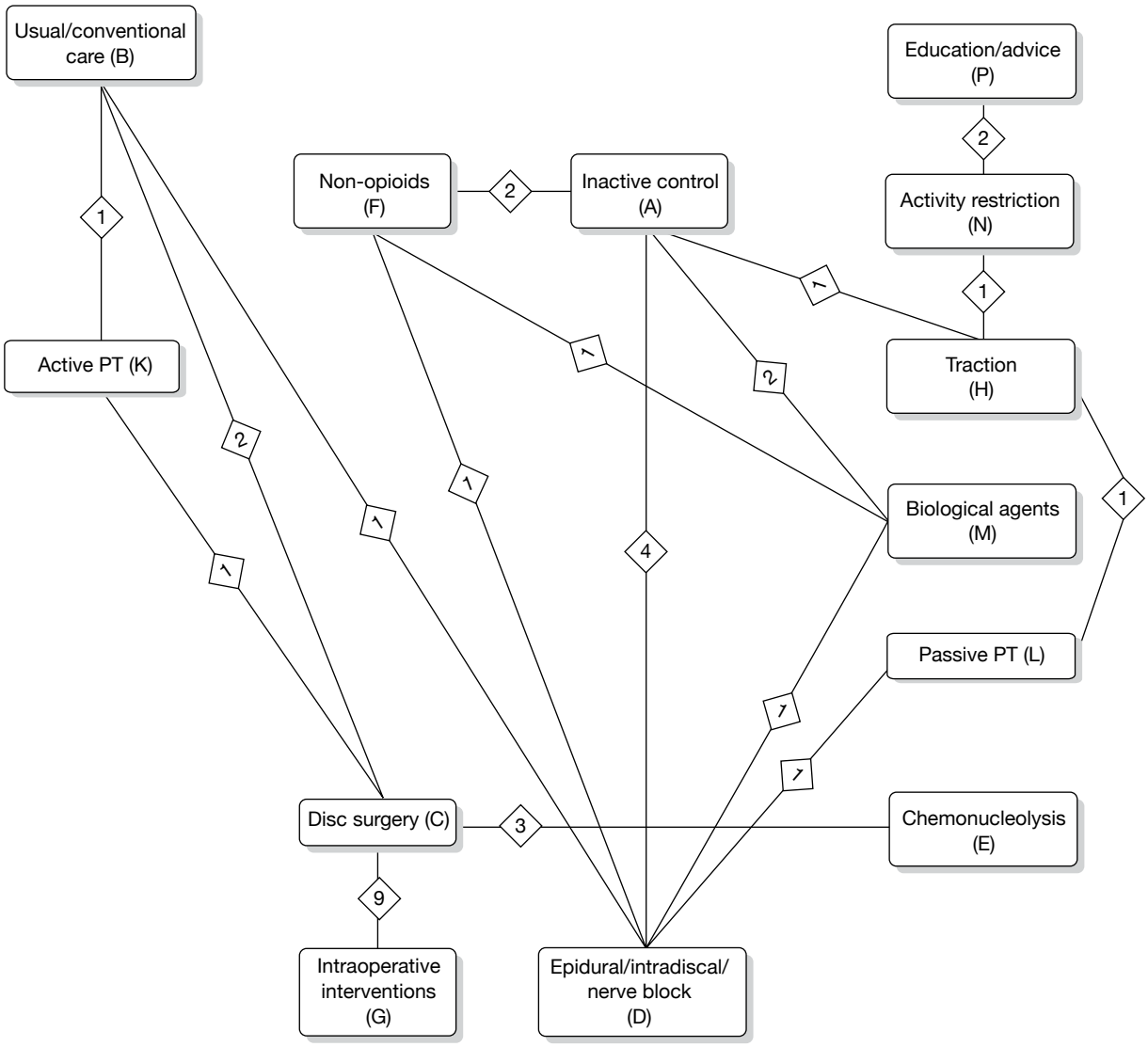
Pain mixed treatment comparison network for randomised controlled trials and quasi-randomised controlled trials



Condition-specific outcome measure mixed treatment comparison network for all study designs



Condition-specific outcome measure mixed treatment comparison network for randomised controlled trials and quasi-randomised controlled trials



Appendix 7

WinBUGS plots for the Gelman–Rubin statistic

Here are a selection of Brook–Gelman–Rubin diagnostic plots that demonstrate that convergence was achieved at around 6–8000 iterations for all three outcome measures included in the MTC analyses [global effect (*Figures 113–115*), pain intensity (*Figures 116–118*) and CSOMs (*Figures 119–121*)]. The black line represents *R*, the dark grey line represents *B* (pooled) and the light grey line represents *W* (average). $R = B/W$, where *B* is the within-chain variability and *W* the between-chain variability. It is important not only that *R* has converged around 1, but also that *B* and *W* have converged to stability.

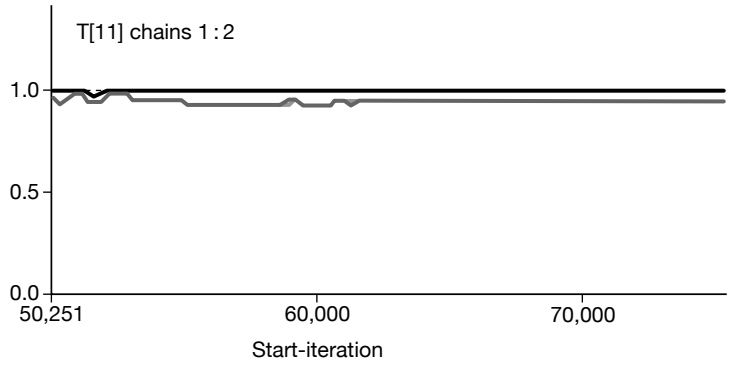


FIGURE 113 Diagnostic plot for the parameter T (risk of improving) for treatment 11 (K – active PT).

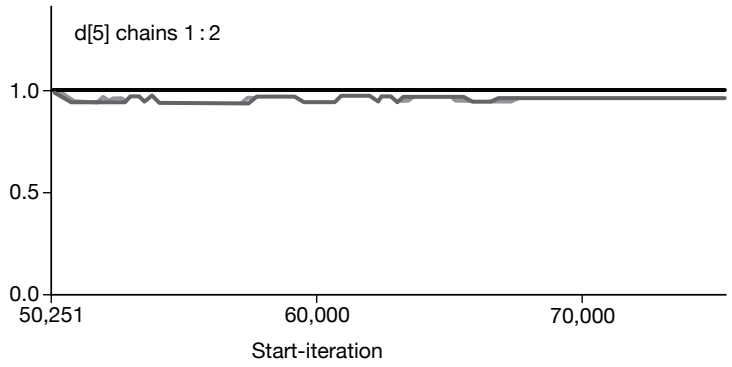


FIGURE 114 Diagnostic plot for the parameter d (log OR) for treatment 5 (E – chemonucleolysis) compared with inactive control.

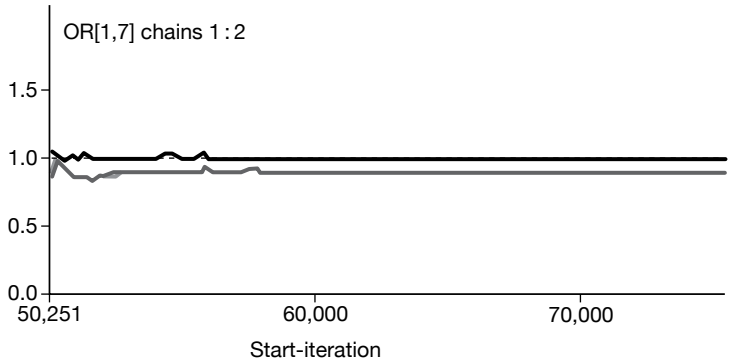


FIGURE 115 Diagnostic plot for the parameter OR of treatment 7 (G – intraoperative interventions) compared with inactive control.

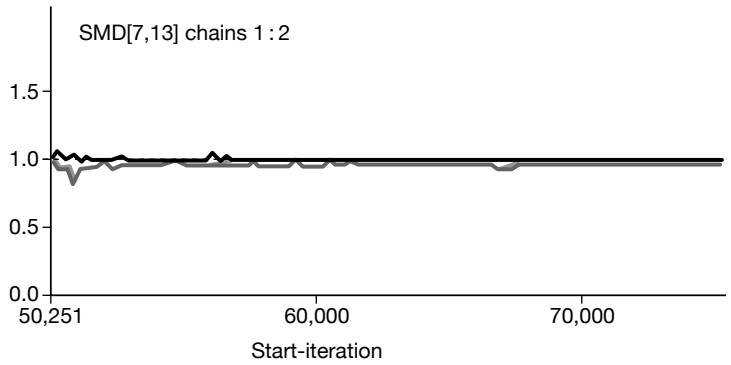


FIGURE 116 Diagnostic plot for the parameter SMD (mean difference) for the comparison of treatment 7 (G – intraoperative interventions) with treatment 13 (M – biological agents).

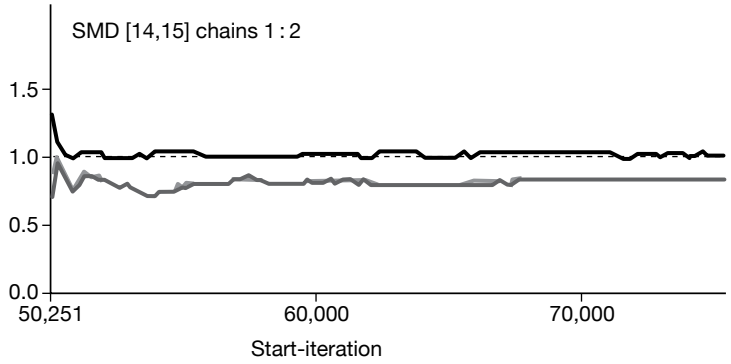


FIGURE 117 Diagnostic plot for the parameter SMD (mean difference) for the comparison of treatment 14 (N – activity restriction) with treatment 15 (O – opioids).

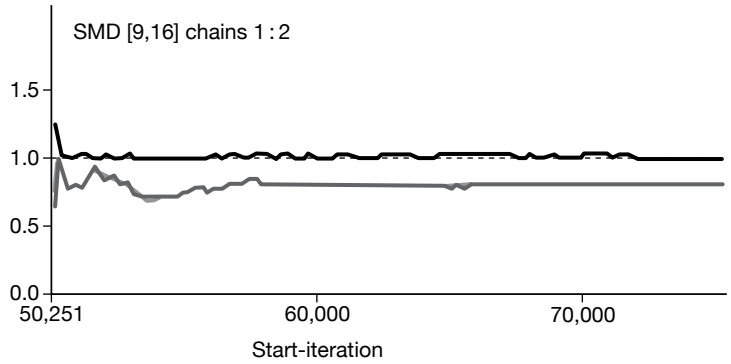


FIGURE 118 Diagnostic plot for the parameter SMD (mean difference) for the comparison of treatment 9 (I – manipulation) with treatment 16 (P – education/advice).

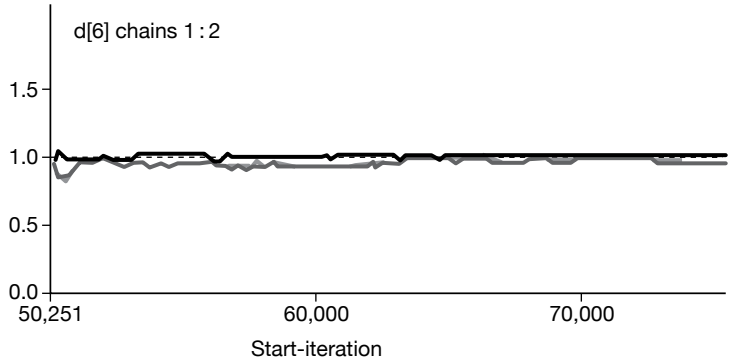


FIGURE 119 Diagnostic plot for the parameter d (mean difference) for the comparison of treatment 6 (F – non-opioids) with inactive control.

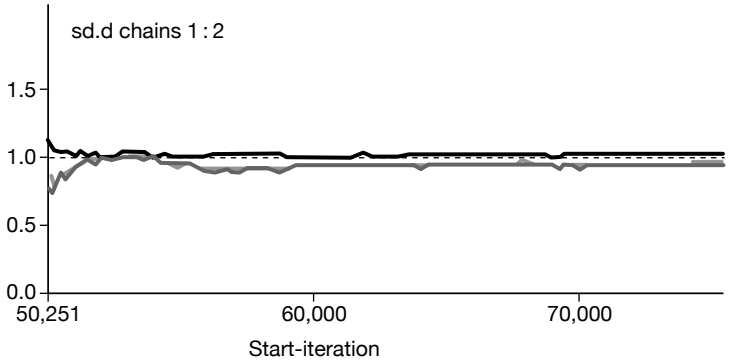


FIGURE 120 Diagnostic plot for the parameter sd.d (between-study deviation).

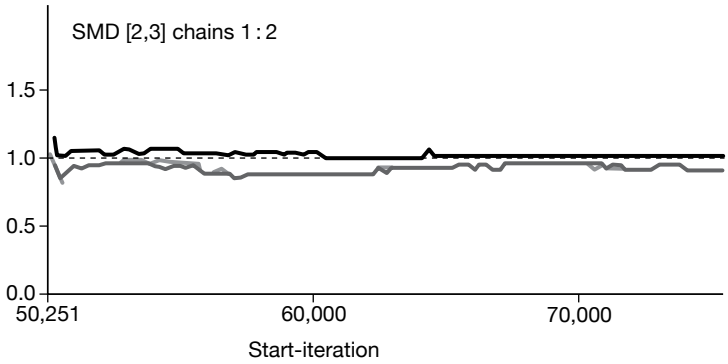


FIGURE 121 Diagnostic plot for the parameter SMD (mean difference) for the comparison of treatment 2 (B – usual care) with treatment 3 (C – disc surgery).

Appendix 8

Heterogeneity and model fit for the mixed treatment comparison analyses

Model fit

TABLE 176 Residual deviance data for all the MTC models

Model	No. of data points	Posterior mean deviance
Global effect including all study designs	178	186
Global effect including RCTs and Q-RCTs	130	135
Pain intensity including all study designs	108	109
Pain intensity including RCTs and Q-RCTs	94	94
CSOMs including all study designs	82	41
CSOMs including RCTs and Q-RCTs	66	28

Assessment of heterogeneity

Global effect

For the MTC analyses of global effect that included all study designs, the median between-trial variance (tau-squared) observed in the posterior distributions was 0.72 (95% credible interval 0.44 to 1.18). However, this does not give an indication of the between-study heterogeneity within each intervention comparison. This information has been derived from the standard, pair-wise meta-analyses shown in *Table 177*. There was high-to-moderate heterogeneity between studies for the following comparators: epidural versus inactive control, non-opioids versus inactive control, passive PT versus inactive control, disc surgery versus usual care, epidural versus usual care, chemonucleolysis versus disc surgery, chemonucleolysis versus epidural and opioids versus non-opioids.

For the MTC analyses of global effect that included only the RCTs and Q-RCTs, the median between-trial variance (tau-squared) observed in the posterior distributions was 0.74 (95% credible interval 0.40 to 1.34). The between-study heterogeneity for each intervention comparison, derived from the standard, pair-wise meta-analyses, is shown in *Table 178*. There was high-to-moderate heterogeneity between studies for the following comparators: epidural versus inactive control, non-opioids versus inactive control, passive PT versus inactive control, disc surgery versus usual care, chemonucleolysis versus disc surgery, chemonucleolysis versus epidural and opioids versus non-opioids.

TABLE 177 Test(s) of heterogeneity for studies included in the standard pair-wise analyses for global effect which included all study types

Treatment comparators (no. of studies)	Chi-squared statistic	Degrees of freedom	*p*-value	I^2 (%)[a]	τ2
DA (9)	26.58	8	0.001	69.9	0.7921
EA (5)	5.01	4	0.286	20.2	0.0604
FA (10)	45.44	9	0.000	80.2	1.0142
HA (2)	0.18	1	0.669	0.0	0.0000
IA (1)	0.00	0			0.0000
LA (2)	6.64	1	0.010	84.9	1.7336
MA (1)	0.00	0			1.7336
OA (1)	0.00	0			1.7336
CB (5)	10.15	4	0.038	60.6	0.1806
DB (3)	8.82	2	0.012	77.3	2.2995
HB (1)	0.00	0			2.2995
KB (1)	0.00	0			2.2995
EC (23)	94.63	22	0.000	76.8	0.4426
FC (1)	0.00	0			0.4426
GC (7)	2.32	6	0.888	0.0	0.0000
KC(1)	0.00	0			0.0000
QC (1)	0.00	0			0.0000
ED (4)	15.34	3	0.002	80.4	1.0747
FD (1)	0.00	0			1.0747
LD (1)	0.00	0			1.0747
ND (1)	0.00	0			1.0747
JF (1)	0.00	0			1.0747
OF (2)	5.61	1	0.018	82.2	2.0863
KH (1)	0.00	0			2.0863
LH (1)	0.00	0			2.0863
NH (1)	0.00	0			2.0863
NK (1)	0.00	0			2.0863
PN (2)	0.76	1	0.384	0.0	0.0000
Overall	**412.18**	**89**	**0.000**	**78.4**	**0.7237**

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation.

a I^2: the variation in OR attributable to heterogeneity.

TABLE 178 Test(s) of heterogeneity for studies included in the standard pair-wise analyses for global effect which included only RCTs or Q-RCTs

Treatment comparators (no. of studies)	Chi-squared statistic	Degrees of freedom	*p*-value	I^2 (%)[a]	τ2
DA (9)	26.58	8	0.001	69.9	0.7921
EA (5)	5.01	4	0.286	20.2	0.0604
FA (9)	41.56	8	0.000	80.8	1.0459
HA (2)	0.18	1	0.669	0.0	0.0000
IA (1)	0.00	0			0.0000
LA (2)	6.64	1	0.010	84.9	1.7336
MA (1)	0.00	0			1.7336
OA (1)	0.00	0			1.7336
CB (3)	8.96	2	0.011	77.7	0.4647
DB (2)	0.17	1	0.680	0.0	0.0000
KB (1)	0.00	0			0.0000
EC (7)	19.69	6	0.003	69.5	0.4323
GC (7)	2.32	6	0.888	0.0	0.0000
KC (1)	0.00	0			0.0000
QC (1)	0.00	0			0.0000
ED (3)	8.79	2	0.012	77.2	0.6664
FD (1)	0.00	0			0.6664
LD (1)	0.00	0			0.6664
JF (1)	0.00	0			0.6664
OF (2)	5.61	1	0.018	82.2	2.0863
KH (1)	0.00	0			2.0863
LH (1)	0.00	0			2.0863
NH (1)	0.00	0			2.0863
NK (1)	0.00	0			2.0863
PN (2)	0.76	1	0.384	0.0	0.0000
Overall	**199.22**	**65**	**0.000**	**67.4**	**0.4844**

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation.

a I^2: the variation in OR attributable to heterogeneity.

Pain intensity

For the MTC analyses of pain intensity that included all study designs, the median between-trial variance (tau-squared) observed in the posterior distributions was 140.40 (95% credible interval 77.86 to 261.50). The between-study heterogeneity for each intervention comparison, derived from the standard, pair-wise meta-analyses, is shown in *Table 179*. There was high-to-moderate heterogeneity between studies for the following comparators: epidural versus inactive control, chemonucleolysis versus disc surgery, non-opioids versus inactive control, non-opioids versus epidural, intraoperative interventions versus disc surgery, traction versus passive PT and biological agents versus inactive control.

TABLE 179 Test(s) of heterogeneity for studies included in the standard pair-wise analyses for pain intensity which included all study types

Treatment comparator (no. of studies)	Chi-squared statistic	Degrees of freedom	*p*-value	I^2 (%)[a]	τ^2
CB (2)	1.02	1	0.313	1.8	0.7251
DA (8)	69.78	7	0.000	90.0	239.5391
DB (2)	0.03	1	0.868	0.0	0.0000
DL (1)	0.00	0			0.0000
EA (1)	0.00	0			0.0000
EC (4)	16.99	3	0.001	82.3	122.3658
FA (5)	36.88	4	0.000	89.2	118.1834
FC (1)	0.00	0			0.0000
FD (2)	7.92	1	0.005	87.4	62.9147
GC (8)	29.82	7	0.000	76.5	72.3876
HA (1)	0.00	0			0.0000
HL (2)	4.28	1	0.038	76.7	122.8115
IE (1)	0.00	0			0.0000
JA (1)	0.00	0			0.0000
JD (1)	0.00	0			0.0000
KB (1)	0.00	0			0.0000
KC (1)	0.00	0			0.0000
LA (1)	0.00	0			0.0000
MA (2)	13.69	1	0.000	92.7	535.7751
MF (1)	0.00	0			0.0000
NH (1)	0.00	0			0.0000
OF (3)	3.81	2	0.149	47.5	43.5168
PN (2)	0.16	1	0.689	0.0	0.0000
SA (1)	0.00	0			0.0000

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation; S, radiofrequency lesioning.
a *I*-squared: the variation in OR attributable to heterogeneity.

For the MTC analyses of pain intensity that included only the RCTs and Q-RCTs, the median between-trial variance (tau-squared) observed in the posterior distributions was 155.90 (95% credible interval 82.98 to 306.20). The between-study heterogeneity for each intervention comparison, derived from the standard pair-wise meta-analyses, is shown in *Table 180*. There was high-to-moderate heterogeneity between studies for the following comparators: epidural versus inactive control, non-opioids versus inactive control, chemonucleolysis versus disc surgery, intraoperative interventions versus disc surgery, non-opioids versus epidural and traction versus passive PT.

TABLE 180 Test(s) of heterogeneity for studies included in the standard pair-wise analyses for pain intensity which included only RCTs or Q-RCTs

Treatment comparator (no. of studies)	Chi-squared statistic	Degrees of freedom	*p*-value	I^2 (%)[a]	τ^2
DA (8)	69.78	7	0.000	90.0	239.5391
EA (1)	0.00	0			0.0000
FA (5)	36.88	4	0.000	89.2	118.1834
HA (1)	0.00	0			0.0000
JA (1)	0.00	0			0.0000
LA (1)	0.00	0			0.0000
MA (1)	0.00	0			0.0000
SA (1)	0.00	0			0.0000
CB (1)	0.00	0			0.0000
DB (2)	0.03	1	0.868	0.0	0.0000
KB (1)	0.00	0			0.0000
EC (2)	11.73	1	0.001	91.5	263.4570
GC (8)	29.82	7	0.000	76.5	72.3876
KC (1)	0.00	0			0.0000
FD (2)	7.92	1	0.005	87.4	62.9147
IE (1)	0.00	0			0.0000
OF (3)	3.81	2	0.149	47.5	43.5168
NH (1)	0.00	0			0.0000
DL (1)	0.00	0			0.0000
HL (2)	4.28	1	0.038	76.7	122.8115
PN (2)	0.16	1	0.689	0.0	0.0000

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation; S, radiofrequency lesioning.

a I^2: the variation in OR attributable to heterogeneity.

Condition-specific outcome measures

For the MTC analyses of CSOMs that included all study designs, the median between-trial variance (tau-squared) observed in the posterior distributions was 0.02 (95% credible interval 4.84×10^5 to 0.18). The between-study heterogeneity for each intervention comparison, derived from the standard, pair-wise meta-analyses, is shown in *Table 181*. There was high-to-moderate heterogeneity between studies for the following comparators: epidural versus inactive control, disc surgery versus usual care and intraoperative interventions versus disc surgery.

For the MTC analyses of CSOMs that included only the RCTs and Q-RCTs, the median between-trial variance (tau-squared) observed in the posterior distributions was 0.01 (95% credible interval 2.89×10^5 to 0.17). The between-study heterogeneity for each intervention comparison, derived from the standard, pair-wise meta-analyses, is shown in *Table 182*. There was high-to-moderate heterogeneity between studies for the following comparators: biological agents versus inactive control, chemonucleolysis versus disc surgery and intraoperative intervention versus disc surgery.

TABLE 181 Test(s) of heterogeneity for studies included in the standard pair-wise analyses for the composite outcome CSOMs which included all study types

Treatment comparator (no. of studies)	Chi-squared statistic	Degrees of freedom	*p*-value	I^2 (%)[a]	τ^2
DA (5)	34.06	4	0.000	88.3	0.2445
FA (2)	1.56	1	0.212	35.9	0.0469
HA (1)	0.00	0			0.0000
MA (3)	3.75	2	0.153	46.7	0.1602
CB (6)	41.21	5	0.000	87.9	0.0790
DB (1)	0.00	0			0.0000
KB (1)	0.00	0			0.0000
EC (4)	2.44	3	0.486	0.0	0.0000
GC (8)	26.04	7	0.000	73.1	0.0946
KC (1)	0.00	0			0.0000
FD (1)	0.00	0			0.0000
LD (1)	0.00	0			0.0000
MD (1)	0.00	0			0.0000
MF (1)	0.00	0			0.0000
LH (1)	0.00	0			0.0000
NH (1)	0.00	0			0.0000
PN (2)	0.68	1	0.410	0.0	0.0000

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation.
a *I*-squared: the variation in OR attributable to heterogeneity.

TABLE 182 Test(s) of heterogeneity for studies included in the standard pair-wise analyses for pain intensity which included only RCTs or Q-RCTs

Treatment comparator (no. of studies)	Chi-squared statistic	Degrees of freedom	*p*-value	I^2 (%)[a]	τ^2
DA (4)	2.86	3	0.413	0.0	0.0000
FA (2)	1.56	1	0.212	35.9	0.0469
HA (1)	0.00	0			0.0000
MA (2)	3.42	1	0.064	70.7	0.9498
CB (2)	0.04	1	0.835	0.0	0.0000
DB (1)	0.00	0			0.0000
KB (1)	0.00	0			0.0000
EC (4)	9.17	3	0.027	67.3	0.1253
GC (8)	26.04	7	0.000	73.1	0.0946
KC (1)	0.00	0			0.0000
FD (1)	0.00	0			0.0000
LD (1)	0.00	0			0.0000
MD (1)	0.00	0			0.0000
LH (1)	0.00	0			0.0000
NH (1)	0.00	0			0.0000
PN (2)	0.68	1	0.410	0.0	0.0000

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation.
a I^2: the variation in OR attributable to heterogeneity.

Appendix 9

Results of the mixed treatment comparison analyses

TABLE 183 Global effect – all study designs (OR, 95% CI/credible interval)

Treatment category	Treatment code	Treatment code																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Inactive control	A				*N*=9 2.58 (1.25 to 5.29)	*N*=5, 2.56 (1.59 to 4.12)	*N*=10 (*n*=9) 2.16 (1.05 to 4.46)		*N*=2 1.11 (0.60 to 2.05)	*N*=1 4.71 (1.95 to 11.37)			*N*=2 1.57 (0.22 to 11.33)	*N*=1 10.0 (0.65 to 166.6)		*N*=1 1.37 (0.50 to 3.76)		
Usual care	B	0.83 (0.35 to 1.91)		*N*=5 (*n*=3) 2.60 (1.59 to 4.25)	*N*=3 (*n*=2) 5.46 (0.77 to 38.50)				*N*=1 (*n*=0) 1.53 (0.56 to 4.19)			*N*=1 1.45 (0.71 to 2.98)						
Disc surgery	C	2.78 (1.37 to 5.59)	3.37 (1.70 to 6.76)			*N*=23 (*n*=7) 0.65 (0.47 to 0.89)	*N*=1, (*n*=0) 6.72 (0.77 to 58.79)	*N*=7 1.49 (1.03 to 2.15)				*N*=1 0.77 (0.18 to 3.22)						*N*=1 1.13 (0.36 to 3.60)
Epidural/nerve Block	D	3.10 (1.79 to 5.46)	3.75 (1.69 to 8.42)	1.11 (0.55 to 2.25)		*N*=4 (*n*=3) 1.13 (0.35 to 3.61)	*N*=1 0.45 (0.15 to 1.39)						*N*=1 0.20 (0.07 to 0.57)		*N*=1 (*n*=0) 0.22 (0.06 to 0.86)			
Chemonucleolysis	E	2.00 (1.05 to 3.82)	2.42 (1.16 to 5.12)	0.72 (0.49 to 1.06)	0.65 (0.34 to 1.24)													
Non-opioids	F	2.55 (1.42 to 4.65)	3.09 (1.16 to 8.39)	0.92 (0.39 to 2.2)	0.82 (0.38 to 1.78)	1.27 (0.56 to 2.94)					*N*=1 3.27 (0.77 to 13.83)					*N*=2 0.55 (0.06 to 5.03)		
Intraoperative interventions	G	4.73 (1.61 to 13.99)	5.72 (1.97 to 16.75)	1.70 (0.76 to 3.86)	1.52 (0.52 to 4.49)	2.35 (0.96 to 5.82)	1.85 (0.57 to 6.06)											
Traction	H	1.20 (0.47 to 3.08)	1.46 (0.51 to 4.20)	0.44 (0.15 to 1.23)	0.39 (0.14 to 1.05)	0.60 (0.21 to 1.68)	0.47 (0.16 to 1.40)	0.26 (0.07 to 0.95)				*N*=1 0.88 (0.28 to 2.72)	*N*=1 0.93 (0.46 to 1.86)		*N*=1, 1.00 (0.14 to 7.01)			

Treatment category	Treatment code	Treatment code																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Manipulation	I	4.88 (0.73 to 33.2)	5.91 (0.72 to 47.07)	1.76 (0.23 to 13.38)	1.57 (0.21 to 11.36)	2.45 (0.32 to 18.31)	1.91 (0.26 to 14.0)	1.03 (0.11 to 9.12)	4.06 (0.47 to 33.75)									
Alternative/ non-traditional	J	9.32 (0.95 to 104.5)	11.27 (0.99 to 144.5)	3.35 (0.31 to 40.88)	2.99 (0.29 to 35.58)	4.64 (0.43 to 56.23)	3.65 (0.39 to 38.01)	1.98 (0.16 to 27.49)	7.73 (0.65 to 102.4)	1.91 (0.10 to 41.68)								
Active PT	K	1.10 (0.32 to 3.78)	1.33 (0.40 to 4.35)	0.40 (0.12 to 1.30)	0.35 (0.10 to 1.20)	0.55 (0.16 to 1.85)	0.43 (0.11 to 1.63)	0.23 (0.05 to 0.99)	0.90 (0.26 to 3.16)	0.22 (0.02 to 2.24)	0.12 (0.01 to 1.57)				*N*=1 2.20 (0.63 to 7.66)			
Passive PT	L	1.14 (0.41 to 3.17)	1.38 (0.40 to 4.72)	0.41 (0.13 to 1.33)	0.37 (0.12 to 1.07)[a]	0.57 (0.18 to 1.79)	0.45 (0.14 to 1.43)	0.24 (0.06 to 1.01)	0.94 (0.29 to 3.07)	0.23 (0.03 to 2.03)	0.13 (0.01 to 1.50)	1.04 (0.23 to 4.73)						
Biological agents	M	15.77 (0.61 to 1002.00)	19.26 (0.66 to 1357.00)	5.68 (0.21 to 396.40)	5.10 (0.18 to 335.30)	7.90 (0.29 to 544.60)	6.19 (0.23 to 408.60)	3.38 (0.11 to 248.70)	13.20 (0.44 to 942.70)	3.36 (0.07 to 306.30)	1.75 (0.03 to 179.20)	14.6 (0.44 to 1085.00)	14.03 (0.45 to 973.70)					
Activity restriction	N	1.278 (0.29 to 5.51)	1.54 (0.33 to 7.08)	0.46 (0.10 to 2.03)	0.41 (0.09 to 1.71)	0.64 (0.14 to 2.80)	0.50 (0.10 to 2.36)	0.27 (0.05 to 1.49)	1.05 (0.24 to 4.7)	0.26 (0.02 to 2.9)	0.14 (0.01 to 2.03)	1.16 (0.26 to 5.07)	1.12 (0.20 to 5.98)	0.08 (0.00 to 2.89)			*N*=2 1.32 (0.75 to 2.32)	
Opioids	O	1.60 (0.48 to 5.41)	1.95 (0.45 to 8.36)	0.58 (0.15 to 2.27)	0.52 (0.14 to 1.92)	0.80 (0.21 to 3.07)	0.63 (0.20 to 1.96)	0.34 (0.07 to 1.67)	1.33 (0.29 to 6.19)	0.33 (0.03 to 3.27)	0.17 (0.01 to 2.10)	1.46 (0.27 to 8.33)	1.41 (0.29 to 6.83)	0.10 (0.00 to 3.27)	1.26 (0.19 to 8.66)			
Education/ advice	P	1.63 (0.22 to 12.05)	1.98 (0.26 to 14.69)	0.59 (0.08 to 4.34)	0.53 (0.07 to 3.72)	0.81 (0.11 to 6.00)	0.64 (0.08 to 5.0)	0.34 (0.04 to 2.99)	1.35 (0.18 to 9.99)	0.33 (0.02 to 5.3)	0.17 (0.01 to 3.49)	1.48 (0.20 to 10.85)	1.43 (0.17 to 12.47	0.10 (0.00 to 4.86)	1.28 (0.34 to 4.88)	1.02 (0.10 to 10.18)		
Spinal cord stimulation	Q	3.19 (0.36 to 27.57)	3.84 (0.44 to 33.72)	1.14 (0.15 to 8.89)	1.03 (0.12 to 8.91)	1.59 (0.20 to 12.84)	1.25 (0.13 to 11.55)	0.67 (0.07 to 5.93)	2.66 (0.26 to 25.95)	0.65 (0.04 to 12.15)	0.34 (0.01 to 8.00)	2.90 (0.27 to 30.79)	2.80 (0.26 to 28.88	0.19 (0.00 to 10.13)	2.54 (0.20 to 31.92)	2.0 (0.16 to 23.5)	1.97 (0.11 to 34.79)	

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation; S, radiofrequency lesioning.

Lower triangle, MTC; *n*, number of RCTs/Q-RCTs; *N*, number of studies; upper triangle, direct pair-wise comparison.

a For the direct pair-wise analysis, the findings are interpreted as interventions listed on the first row compared with the control group listed in the first two columns and for the MTC findings are interpreted as interventions listed in the first two columns compared with the control group listed in the first row, e.g. epidural/nerve block (D) was found to be more effective than inactive control (A) and passive PT (L) less effective than epidural/nerve block (D).

Statistically significant findings have been shaded.

An OR >1.00 represents findings that favour the intervention group compared with the control.

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TABLE 184 Global effect – RCTs/Q-RCTs only (OR, 95% CI/credible interval)

Treatment category	Treatment code	Treatment code																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Inactive control	A				*N* = 9 2.58 (1.25 to 5.29)	*N* = 5 2.56 (1.59 to 4.12)	*N* = 9 2.50 (1.16 to 5.42)		*N* = 2 1.11 (0.60 to 2.05)	*N* = 1 4.71 (1.95 to 11.37)			*N* = 2 1.57 (0.22 to 11.33)	*N* = 1 10.00 (0.65 to 166.60)		*N* = 1 1.37 (0.50 to 3.76)		
Usual care	B	1.14 (0.39 to 3.46)		*N* = 3 2.62 (1.09 to 6.31)	*N* = 2 1.99 (0.66 to 6.03)							*N* = 1 1.46 (0.71 to 2.98)						
Disc surgery	C	2.94 (1.18 to 7.49)	2.57 (1.03 to 6.42)			*N* = 7 0.83 (0.45 to 1.52)		*N* = 7 1.49 (1.03 to 2.15)				*N* = 1 0.77 (0.18 to 3.22)						*N* = 1 1.13 (0.36 to 3.60)
Epidural/nerve block	D	3.14 (1.77 to 5.65)	2.74 (0.94 to 8.02)	1.07 (0.42 to 2.69)		*N* = 3 0.74 (0.26 to 2.11)	*N* = 1 0.46 (0.15 to 1.39)						*N* = 1 0.20 (0.07 to 0.57)					
Chemonucleolysis	E	2.38 (1.20 to 4.81)	2.07 (0.75 to 5.75)	0.81 (0.40 to 1.61)	0.76 (0.37 to 1.57)													
Non-opioids	F	2.59 (1.37 to 4.95)	2.26 (0.64 to 7.88)	0.88 (0.29 to 2.66)	0.82 (0.36 to 1.89)	1.09 (0.43 to 2.80)					*N* = 1 3.27 (0.77 to 13.83)					*N* = 20.55 (0.06 to 5.03)		
Intraoperative interventions	G	4.99 (1.50 to 17.47)	4.36 (1.29 to 14.94)	1.7 (0.76 to 3.88)	1.59 (0.48 to 5.53)	2.10 (0.72 to 6.25)	1.93 (0.49 to 7.82)											
Traction	H	1.36 (0.48 to 3.95)	1.19 (0.30 to 4.69)	0.46 (0.13 to 1.67)	0.43 (0.13 to 1.37)	0.57 (0.17 to 1.91)	0.52 (0.15 to 1.80)	0.27 (0.06 to 1.23)				*N* = 1 0.88 (0.28 to 2.72)	*N* = 1 0.93 (0.46 to 1.86)		*N* = 1 1.00 (0.14 to 7.10)			
Manipulation	I	4.90 (0.70 to 34.48)	4.31 (0.45 to 38.85)	1.67 (0.20 to 14.14)	1.56 (0.20 to 11.7)	2.05 (0.26 to 16.04)	1.89 (0.24 to 14.64)	0.98 (0.10 to 9.52)	3.62 (0.39 to 32.82)									

Treatment category	Treatment code	Treatment code A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
Alternative/non-traditional	J	9.25 (0.90 to 107.70)	8.15 (0.62 to 116.60)	3.16 (0.25 to 43.04)	2.95 (0.27 to 36.25)	3.89 (0.34 to 49.11)	3.59 (0.38 to 38.59)	1.85 (0.13 to 28.39)	6.84 (0.53 to 96.63)	1.92 (0.09 to 42.55)								
Active PT	K	1.46 (0.38 to 5.76)	1.28 (0.34 to 4.69)	0.50 (0.13 to 1.84)	0.47 (0.12 to 1.85)	0.62 (0.16 to 2.38)	0.57 (0.13 to 2.5)	0.29 (0.06 to 1.35)	1.07 (0.28 to 4.26)	0.30 (0.03 to 3.22)	0.16 (0.01 to 2.35)				*N*=1 2.20 (0.63 to 7.66)			
Passive PT	L	1.19 (0.42 to 3.42)	1.04 (0.25 to 4.5)	0.41 (0.11 to 1.53)	0.38 (0.12 to 1.15)	0.50 (0.15 to 1.70)	0.46 (0.14 to 1.55)	0.24 (0.05 to 1.12)	0.87 (0.25 to 3.09)	0.24 (0.03 to 2.17)	0.13 (0.01 to 1.64)	0.81 (0.17 to 4.05)						
Biological agents	M	16.04 (0.60 to 1138.00)	14.11 (0.43 to 1128.00)	5.48 (0.18 to 419.60)	5.11 (0.18 to 369.00)	6.76 (0.23 to 505.40)	6.20 (0.21 to 448.50)	3.24 (0.09 to 252.80)	11.77 (0.36 to 959.10)	3.32 (0.07 to 353.20)	1.76 (0.03 to 215.70)	11.04 (0.31 to 946.50)	13.54 (0.42 to 1081.00)					
Activity restriction	N	2.43 (0.35 to 17.52)	2.14 (0.28 to 15.85)	0.83 (0.11 to 6.06)	0.77 (0.11 to 5.68)	1.03 (0.14 to 7.39)	0.93 (0.12 to 7.33)	0.49 (0.06 to 4.10)	1.78 (0.28 to 11.55)	0.50 (0.03 to 7.64)	0.26 (0.01 to 5.66)	1.65 (0.29 to 9.68)	2.04 (0.25 to 16.92)	0.15 (0.00 to 7.27)			*N*=2 1.32 (0.75 to 2.32)	
Opioids	O	1.62 (0.46 to 5.67)	1.41 (0.27 to 7.42)	0.55 (0.12 to 2.60)	0.52 (0.13 to 2.01)	0.68 (0.16 to 2.84)	0.62 (0.20 to 1.98)	0.32 (0.06 to 1.81)	1.18 (0.23 to 6.16)	0.33 (0.03 to 3.33)	0.17 (0.01 to 2.18)	1.10 (0.17 to 6.93)	1.35 (0.27 to 6.93)	0.10 (0.00 to 3.52)	0.67 (0.06 to 6.78)			
Education/advice	P	3.12 (0.29 to 34.36)	2.73 (0.24 to 30.54)	1.07 (0.10 to 11.63)	0.99 (0.09 to 10.91)	1.32 (0.12 to 14.57)	1.20 (0.11 to 14.2)	0.63 (0.05 to 7.85)	2.30 (0.23 to 23.04)	0.64 (0.03 to 14.12)	0.33 (0.01 to 9.53)	2.14 (0.23 to 19.50)	2.62 (0.22, to 32.80)	0.19 (0.00 to 11.79)	1.29 (0.33 to 4.95)	1.94 (0.13 to 28.94)		
Spinal cord stimulation	Q	3.30 (0.34 to 32.73)	2.88 (0.30 to 27.71)	1.13 (0.14 to 9.05)	1.05 (0.11 to 10.34)	1.39 (0.16 to 12.78)	1.27 (0.12 to 13.36)	0.66 (0.07 to 6.12)	2.43 (0.21 to 28.78)	0.67 (0.03 to 13.70)	0.35 (0.01 to 9.65)	2.26 (0.19 to 26.77)	2.79 (0.23 to 33.22)	0.20 (0.00 to 12.04)	1.35 (0.08 to 25.48)	2.04 (0.16 to 27.35)	1.05 (0.04 to 26.90)	

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation; S, radiofrequency lesioning.
Lower triangle, MTC; *N*, number of studies; upper triangle, direct pair-wise comparison.
Statistically significant findings have been shaded.
An OR >1.00 represents findings that favour the intervention group compared with the control.

TABLE 185 Pain intensity – all studies (WMD, 95% CI/credible interval)

Treatment category	Treatment code	Treatment code																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	S
Inactive control	A				*N*=8 –12.31 (–23.90 to –0.72)	*N*=1 –5.40 (–23.66, to 12.86)	*N*=5 –10.70 (–21.21 to –0.19)		*N*=1 3.36 (–14.49 to 21.21)		*N*=1 –25.00 (–41.75 to –8.24)		*N*=1 –7.00 (–13.58 to –0.42)	*N*=2 (*n*=1) –9.00 (–43.23 to 23.41)				*N*=1 13.00 (2.04 to 23.96)
Usual care	B	–3.184 (–19.45 to 13.18)		*N*=2 (*n*=1) –7.00 (–12.25 to –1.74)	*N*=2 –5.32 (–11.94 to 1.30)							*N*=1 –2.00 (–11.96 to 7.96)						
Disc surgery	C	–9.78 (–26.51 to 6.81)	–6.64 (–21.11 to 7.76)			*N*=4 (*n*=2) –2.59 (–14.58 to 9.40)	*N*=1 (*n*=0) 1.60 (–8.20 to 11.40)	*N*=8 –5.17 (–12.21 to 1.88)				*N*=1 9.00 (–4.05 to 22.05)						
Epidural/nerve block	D	–12.85 (–20.91 to –5.14)	–9.71 (–25.14 to 5.62)	–3.10 (–19.68 to 13.43)			*N*=2 18.01 (6.25 to 29.77)				*N*=1 (*n*=0) –14.00 (–27.45 to –0.55)		*N*=1 35.00 (–24.60 to 94.60)					
Chemonucleolysis	E	–11.24 (–29.76 to 7.20)	–8.02 (–26.15 to 9.77)	–1.44 (–13.82 to 10.64)	1.65 (–17.04 to 20.15)					*N*=1 –0.63 (–14.98 to 13.72)								
Non-opioids	F	–4.07 (–13.57 to 5.11)	0.92 (–18.10 to 16.17)	5.71 (–11.21 to 22.62)	8.78 (–1.55 to 19.24)	7.15 (–11.81 to 26.3)								*N*=1 (*n*=0) –40.50 (–58.08 to –22.92)		*N*=3 13.60 (2.78 to 24.42)		

Treatment category	Treatment code	Treatment code A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	S
Intraoperative interventions	G	–14.88 (–34.05 to 4.02)	–11.75 (–28.87 to 5.38)	–5.11 (–14.41 to 4.20)	–2.01 (–20.98 to 17.09)	–3.66 (–19.02 to 11.79)	–10.81 (–30.10 to 8.48)											
Traction	H	–1.21 (–22.07 to 20.04)	1.90 (–24.28 to 28.84)	8.52 (–17.94 to 35.63)	11.68 (–10.39 to 34.32)	10.03 (–17.58 to 38.21)	–2.87 (–20.02 to 2.87)	13.62 (–14.54 to 42.31)					*N* = 2 2.61 (–14.91 to 20.14)		*N* = 1 19.00 (8.18 to 29.82)			
Manipulation	I	–11.72 (–44.97 to 21.59)	–8.58 (–41.76 to 24.46)	–1.94 (–32.62 to 28.27)	1.11 (–32.16 to 34.64)	–0.48 (–28.48 to 27.31)	–7.56 (–41.24 to 26.05)	3.19 (–28.63 to 34.92)	–10.48 (–50.41 to 28.56)									
Alternative/non-traditional	J	–26.08 (–46.65 to -6.06)	–23.00 (–48.02 to 2.38)	–16.36 (–41.91 to 9.29)	–13.28 (–33.37 to 7.09)	–14.89 (–41.69 to 12.17)	–22.05 (–43.82 to –0.11)	–11.27 (–38.44 to 16.18)	–24.96 (–54.12 to 4.16)	–14.41 (–53.23 to 24.17)								
Active PT	K	–3.04 (–27.35 to 20.94)	0.08 (–19.84 to 20.16)	6.64 (–13.61 to 27.10)	9.84 (–13.97 to 33.74)	8.17 (–15.08 to 31.54)	–0.96 (–23.41 to 25.50)	11.75 (–10.45 to 34.39)	–1.85 (–34.27 to 29.92)	8.57 (–27.25 to 45.28)	23.14 (–8.13 to 53.85)							
Passive PT	L	–0.40 (–19.33 to 19.0)	–2.72 (–22.17 to 28.03)	9.34 (–15.66 to 35.04)	12.48 (–7.67 to 33.38)	10.76 (–15.62 to 37.78)	3.66 (–17.32 to 25.3)	14.42 (–12.47 to 41.62)	0.75 (–16.02 to 17.69)	11.19 (–26.92 to 50.11)	25.67 (–1.88 to 53.54)	2.59 (–27.72 to 33.73)						
Biological agents	M	–21.80 (–35.95 to –7.95)	–18.67 (–39.17 to 1.87)	–12.09 (–32.85 to 8.74)	–8.93 (–23.51 to 5.59)	–10.68 (–32.97 to 11.88)	–17.79 (–32.99 to –2.46)	–6.99 (–29.96 to 15.99)	–20.58 (–46.05 to 4.22)	–10.19 (–45.66 to 25.66)	4.24 (–19.93 to 28.40)	–18.76 (–45.93 to 8.62)	–21.31 (–45.47 to –1.87)					
Activity restriction	N	18.00 (–15.57 to 51.16)	21.18 (–16.40 to 58.23)	27.68 (–9.54 to 65.22)	30.90 (–3.38 to 64.72)	29.21 (–9.02 to 67.35)	22.05 (–12.57 to 56.55)	32.82 (–5.63 to 71.33)	19.08 (–7.01 to 45.22)	29.50 (–17.36 to 77.28)	44.08 (4.85 to 82.93)	21.10 (–20.36 to 62.3)	18.47 (–13.19 to 49.04)	39.74 (3.59 to 75.82)		*N* = 2 –1.09 (–6.80 to 4.62)		

continued

TABLE 185 Pain intensity – all studies (WMD, 95% CI/credible interval) *(continued)*

Treatment category	Treatment code	Treatment code																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	S
Opioids	**O**	9.34 (–9.15 to 27.40)	12.60 (–11.16 to 35.67)	19.12 (–4.13 to 42.57)	22.21 (3.32 to 41.09)	20.55 (–4.29 to 45.29)	13.41 (–2.61 to 29.23)	24.23 (–0.61 to 49.21)	10.51 (–17.88 to 38.26)	20.95 (–16.01 to 58.50)	35.48 (8.30 to 62.33)	12.51 (–16.93 to 41.65)	9.82 (–17.09 to 36.06)	31.20 (9.17 to 52.98)	–8.58 (–46.97 to 29.51)			
Education/advice	**P**	17.04 (–20.8 to 54.62)	20.22 (–21.16 to 61.27)	26.84 (–14.40 to 68.38)	29.97 (–8.72 to 68.38)	28.35 (–13.73 to 70.55)	21.13 (–17.79 to 60.14)	31.95 (–10.38 to 74.44)	18.20 (–13.40 to 49.86)	28.75 (–21.32 to 79.48)	43.22 (0.19 to 85.54)	20.21 (–25.13 to 64.84)	17.60 (–18.48 to 52.95)	38.94 (–1.36 to 79.35)	–0.88 (–18.75 to 17.16)	7.72 (–34.07 to 49.88)		
Radiofrequency lesioning	**S**	12.94 (–13.38 to 39.01)	16.26 (–14.79 to 47.04)	22.77 (–8.36 to 53.87)	25.8 (–1.58 to 53.22)	24.19 (–7.81 to 56.38)	16.99 (–10.81 to 44.92)	27.92 (–4.76 to 60.22)	14.1 (–19.73 to 47.59)	24.65 (–17.6 to 67.26)	39.09 (6.11 to 72.26)	16.13 (–19.84 to 51.7)	13.41 (–19.5 to 45.84)	34.71 (4.92 to 64.35)	–4.96 (–47.48 to 37.82)	3.61 (–28.33 to 35.48)	–4.06 (–50.05 to 42.13)	

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation; S, radiofrequency lesioning.

Lower triangle, MTC; *n*, number of RCTs/Q-RCTs; *N*, number of studies; upper triangle, direct pair-wise comparison.

Statistically significant findings have been shaded.

A WMD <0 (representing reduction in pain) show findings that favour the intervention group compared with the control.

For the direct pair-wise analysis the findings are interpreted as interventions listed on the first row compared with the control group listed in the first two columns and for the MTC findings are interpreted as interventions listed in the first two columns compared with the control group listed in the first row.

TABLE 186 Pain intensity – RCTs/Q-RCTs only (WMD, 95% CI/credible interval)

Treatment category	Treatment code	Treatment code																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	S
Inactive control	A				*N*=8 –12.31 (–23.90 to –0.72)	*N*=1 –5.40 (–23.66 to 12.89)	*N*=5 –10.70 (–12.21 to –0.19)		*N*=1 3.36 (–14.49 to 21.21)		*N*=1 –25.00 (–41.75 to –8.24)		*N*=1 –7.00 (–13.58 to –0.42)	*N*=1 7.00 (–5.25 to 19.25)				*N*=1 13.00 (2.04 to 23.96)
Usual care	B	–4.45 (–23.49 to 14.63)		*N*=1 –6.10 (–11.39 to –0.82)	*N*=2 –5.32 (–11.94 to 1.30)							*N*=1 –2.00 (–11.96 to 7.96)						
Disc surgery	C	–8.87 (–32.27 to 14.47)	–4.43 (–23.65 to 14.85)			*N*=2 –5.96 (–29.45 to 17.56)		*N*=8 –5.17 (–12.21 to 1.88)				*N*=1 9.00 (–4.05 to 22.05)						
Epidural/nerve block	D	–12.66 (–21.47 to –4.11)	–8.19 (–26.07 to 9.35)	–3.78 (–26.92 to 19.12)			*N*=2 18.01 (6.25 to 29.77)						N=1 35.00 (–24.60 to 94.60)					
Chemonucleolysis	E	–12.28 (–35.85 to 11.38)	–7.856 (–30.88 to 15.18)	–3.37 (–20.87 to 13.95)	–0.40 (–23.17 to 24.50)					*N*=1 –0.63 (–14.98, 13.72)								
Non-opioids	F	–5.84 (–16.65 to 4.47)	–1.36 (–22.58 to 19.27)	3.05 (–22.19 to 27.94)	6.80 (–5.20 to 18.71)	6.46 (–19.41 to 31.55)										*N*=3 13.60 (2.78 to 24.42)		
Intraoperative interventions	G	–13.94 (–39.47 to 11.56)	–9.51 (–31.10 to 12.22)	–5.07 (–14.80 to 4.87)	–1.27 (–26.35 to 24.08)	–1.65 (–21.78 to 18.34)	–8.16 (–34.85 to 19.42)											

continued

TABLE 186 Pain intensity – RCTs/Q-RCTs only (WMD, 95% CI/credible interval) *(continued)*

Treatment category	Treatment code	Treatment code																
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	S
Traction	H	–1.32 (–23.17 to 20.91)	3.29 (–25.71 to 32.27)	7.57 (–24.35 to 39.72)	11.36 (–11.75 to 35.12)	11.06 (–20.95 to 43.07)	4.58 (–19.35 to 29.3)	12.71 (–20.73 to 46.25)					*N*=2 2.61 (–14.91 to 20.14)		*N*=1 19.00 (8.18 to 29.82)			
Manipulation	I	–12.79 (–50.28 to 24.55)	–8.49 (–45.20 to 28.75)	–3.95 (–38.07 to 30.14)	–0.17 (–37.29 to 37.62)	–0.62 (–29.80 to 28.80)	–6.98 (–45.24 to 31.74)	1.12 (–34.16 to 36.58)	–11.54 (–54.97 to 31.98)									
Alternative/non-traditional	J	–24.89 (–55.67 to 5.35)	–20.33 (–56.61 to 15.17)	–15.95 (–54.37 to 21.99)	–12.2 (–43.99 to 19.26)	–12.57 (–51.22 to 25.59)	–18.97 (–51.52 to 13.03)	–10.9 (–50.82 to 28.28)	–23.7 (–61.56 to 13.97)	–11.97 (–60.19 to 36.22)								
Active PT	K	–3.39 (–30.69 to 23.94)	1.01 (–20.55 to 22.90)	5.55 (–16.71 to 27.55)	9.29 (–17.11 to 36.10)	8.94 (–17.82 to 35.50)	2.45 (–25.97 to 31.34)	10.61 (–13.71 to 34.65)	–2.14 (–36.92 to 32.78)	9.55 (–29.95 to 48.78)	21.63 (–19.22 to 62.57)							
Passive PT	L	–0.23 (–20.29 to 20.33)	4.29 (–23.39 to 32.18)	8.71 (–21.98 to 39.56)	12.40 (–8.92 to 34.41)	12.09 (–19.06 to 43.11)	5.61 (–16.74 to 28.82)	13.75 (–18.31 to 46.44)	1.03 (–16.63 to 18.91)	12.56 (–29.58 to 55.39)	24.73 (–11.97 to 61.69)	3.26 (–30.42 to 37.25)						
Biological agents	M	–11.18 (–30.77 to 8.83)	–6.66 (–32.67 to 19.50)	–2.32 (–31.48, 27.46)	1.41 (–17.69 to 21.50)	1.17 (–28.76 to 31.35)	–5.35 (–26.77 to 17.03)	2.74 (–28.24 to 34.48)	–9.85 (–39.52 to 19.26)	1.69 (–40.18 to 43.76)	13.73 (–22.52 to 50.22)	–7.82 (–40.38 to 25.16)	–10.83 (–39.24 to 16.76)					

Treatment category	Treatment code	Treatment code															
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	S
Activity restriction	**N**	17.44 (–16.86 to 52.78)	21.96 (–17.44 to 62.08)	26.41 (–15.19 to 68.47)	30.08 (–4.92 to 66.52)	29.67 (–11.96 to 72.55)	23.29 (–12.20 to 60.40)	31.41 (–11.49 to 75.09)	18.75 (–8.49 to 46.19)	30.31 (–20.81 to 81.71)	42.63 (–3.83 to 89.39)	20.99 (–23.27 to 65.66)	17.77 (–14.51 to 50.31)	28.65 (–10.75 to 69.12)			*N*=2 –1.09 (–6.80 to 4.62)	
Opioids	**O**	7.41 (–12.54 to 26.94)	11.92 (–15.08 to 38.42)	16.33 (–14.11 to 46.03)	20.08 (–0.43 to 40.68)	19.73 (–11.03 to 49.76)	13.27 (–3.28 to 29.78)	21.36 (–10.68 to 52.76)	8.77 (–21.05 to 37.81)	20.29 (–21.91 to 62.08)	32.34 (–4.08 to 68.75)	10.79 (–22.61 to 43.95)	7.69 (–21.01 to 35.46)	18.63 (–9.02 to 45.64)	–10.05 (–50.65 to 29.11)			
Education/advice	**P**	16.62 (–22.42 to 26.93)	21.04 (–22.72 to 65.52)	25.51 (–20.19 to 71.75)	29.19 (–10.49 to 70.51)	28.78 (–16.75 to 75.11)	22.42 (–17.72 to 64.59)	30.61 (–16.38 to 77.81)	17.96 (–15.05 to 51.26)	29.32 (–24.71 to 84.19)	41.57 (–8.33 to 92.29)	20.11 (–28.17 to 68.22)	16.82 (–20.41 to 54.37)	27.70 (–15.97 to 72.22)	–0.86 (–20.06 to 18.29)	9.18 (–34.25 to 54.14)		
Radiofrequency lesioning	**S**	13.01 (–14.41 to 40.77)	17.36 (–15.83 to 51.35)	21.8 (–14.29 to 58.17)	25.62 (–2.79 to 55.11)	25.34 (–10.94 to 61.79)	18.78 (–10.35 to 48.87)	26.90 (–10.50 to 64.68)	14.25 (–21.2 to 49.57)	25.92 (–20.62 to 71.92)	37.86 (–2.80 to 79.10)	16.39 (–22.72 to 55.21)	13.23 (–20.77 to 47.23)	24.14 (–9.99 to 58.32)	–4.55 (–48.84 to 39.46)	5.57 (–27.90 to 39.77)	–3.47 (–52.37 to 44.44)	

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation; S, radiofrequency lesioning.

Lower triangle, MTC; *N*, number of studies; upper triangle, direct pair-wise comparison.

Statistically significant findings have been shaded.

A WMD <0 (representing reduction in pain) show findings that favour the intervention group compared with the control.

For the direct pair-wise analysis the findings are interpreted as interventions listed on the first row compared with the control group listed in the first two columns and for the MTC findings are interpreted as interventions listed in the first two columns compared with the control group listed in the first row.

TABLE 187 Condition-specific outcome measures – all study designs (SMD, 95% CI/credible interval)

Treatment category	Treatment code	Treatment code												
		A	B	C	D	E	F	G	H	K	L	M	N	P
Inactive control	A				*N*=5 (*n*=4) –0.34 (–0.81 to 0.13)		*N*=2 0.30 (–0.14 to 0.74)		*N*=1 0.08 (–0.31 to 0.47)			*N*=3 (*n*=2) –0.85 (–1.52 to –0.18)		
Usual care	B	0.17 (–1.31 to 1.45)		*N*=6 (*n*=2) –0.09 (–0.33 to 0.15)	*N*=1 –0.35 (–1.03 to 0.33)		a			*N*=1 0.28 (–0.06 to 0.62)				
Disc surgery	C	0.10 (–1.42 to 1.45)	–0.06 (–0.35 to 0.23)			*N*=4 (*n*=3) 0.30 (0.08 to 0.53)		*N*=8 –0.16 (–0.43 to 0.11)		*N*=1 –0.29 (–0.82 to 0.23)				
Epidural/nerve Block	D	–0.16 (–0.53 to 0.19)	–0.34 (–1.56 to 1.09)	–0.28 (–1.55 to 1.20)			*N*=1 –0.42 (–0.92 to 0.08)				*N*=1 –0.83 (–1.32 to –0.33)	*N*=1 0.07 (–0.44 to 0.59)		
Chemonucleolysis	E	0.37 (–1.23 to 1.81)	0.21 (–0.38 to 0.80)	0.27 (–0.24 to 0.78)	0.55 (–1.02 to 1.91)									
Non-opioids	F	0.08 (–0.49 to 0.61)	–0.08 (–1.46 to 1.37)	–0.00 (–1.45 to 1.45)	0.24 (–0.37 to 0.82)	–0.29 (–1.81 to 1.27)						*N*=1 (*n*=0) –1.05 (–1.99 to –0.11)		
Intraoperative interventions	G	–0.04 (–1.51 to 1.36)	–0.21 (–0.64 to 0.23)	–0.14 (–0.48 to 0.18)	0.14 (–1.35 to 1.44)	–0.42 (–1.03 to 0.20)	–0.13 (–1.61 to 1.34)							
Traction	H	–0.37 (–1.25 to 0.44)	–0.53 (–2.00 to 1.16)	–0.47 (–1.98 to 1.23)	–0.21 (–1.05 to 0.64)	–0.74 (–2.35 to 1.06)	–0.46 (–1.41 to 0.57)	–0.31 (–1.89 to 1.34)			*N*=1 0.52 (–0.11 to 1.15)		*N*=1, –0.46 (–1.45 to 0.54)	

Treatment category	Treatment code	Treatment code A	B	C	D	E	F	G	H	K	L	M	N	P
Active PT	K	0.17 (–1.45 to 1.65)	0.02 (–0.73 to 0.72)	0.08 (–0.67 to 0.79)	0.33 (–1.25 to 1.76)	–0.20 (–1.09 to 0.69)	0.08 (–1.56 to 1.66)	0.22 (–0.59 to 1.02)	0.54 (–1.23 to 2.18)					
Passive PT	L	–0.47 (–1.39 to 0.45)	–0.64 (–2.16 to 1.02)	–0.58 (–2.13 to 1.10)	–0.31 (–1.19 to 0.60)	–0.85 (–2.46 to 0.99)	–0.56 (–1.57 to 0.54)	–0.43 (–2.01 to 1.26)	–0.10 (–1.02 to 0.77)	–0.66 (–2.32 to 1.16)				
Biological agents	M	–0.68 (–1.29 to –0.10)	–0.85 (–2.22 to 0.60)	–0.78 (–2.20 to 0.67)	–0.51 (–1.19 to 0.09)	–1.05 (–2.57 to 0.51)	–0.76 (–1.50 to –0.03)	–0.64 (–2.07 to 0.83)	–0.31 (–1.31 to 0.66)	–0.83 (–2.40 to 0.87)	–0.20 (–1.33 to 0.86)			
Activity restriction	N	–0.84 (–2.49 to 0.90)	–1.03 (–3.14 to 1.28)	–0.96 (–3.14 to 1.36)	–0.70 (–2.36 to 1.12)	–1.24 (–3.45 to 1.14)	–0.93 (–2.67 to 0.92)	–0.81 (–3.02 to 1.54)	–0.46 (–1.94 to 1.06)	–1.02 (–3.32 to 1.44)	–0.37 (–2.10 to 1.42)	–0.18 (–1.87 to 1.70)		*N*=2 0.15 (–0.06 to 0.37)
Education/advice	P	–0.66 (–2.47 to 1.24)	–0.83 (–3.08 to 1.58)	–0.78 (–3.08 to 1.65)	–0.50 (–2.35 to 1.41)	–1.06 (–3.40 to 1.41)	–0.76 (–2.62 to 1.24)	–0.62 (–2.94 to 1.82)	–0.30 (–1.93 to 1.40)	–0.85 (–3.26 to 1.72)	–0.19 (–2.06 to 1.69)	–0.01 (–1.84 to 1.98)	0.17 (–0.46 to 0.79)	

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation; S, radiofrequency lesioning.

Lower triangle, MTC; *n*, number of RCTs/Q-RCTs; *N*, number of studies; upper triangle, direct pair-wise comparison.

Statistically significant findings have been shaded.

A SMD < 0 (representing reduction in pain) show findings that favour the intervention group compared with the control.

For the direct pair-wise analysis the findings are interpreted as interventions listed on the first row compared with the control group listed in the first two columns and for the MTC findings are interpreted as interventions listed in the first two columns compared with the control group listed in the first row.

TABLE 188 Condition-specific outcome measures – RCTs/Q-RCTs only (SMD, 95% CI/credible interval)

Treatment category	Treatment code	Treatment code												
		A	B	C	D	E	F	G	H	K	L	M	N	P
Inactive control	A				*N* = 4 –0.03 (–0.18 to 0.13)		*N* = 2 0.30 (–0.14 to 0.74)		*N* = 1 0.08 (–0.31 to 0.47)			*N* = 2 –1.07 (–2.64 to 0.50)		
Usual care	B	0.34 (–0.90 to 1.62)		*N* = 2 –0.15 (–0.30 to 0.00)	*N* = 1 –0.35 (–1.03 to 0.33)					*N* = 1 0.28 (–0.06 to 0.62)				
Disc surgery	C	0.29 (–1.00 to 1.67)	–0.06 (–0.54 to 0.44)			*N* = 3 0.06 (–0.37 to 0.50)		*N* = 8 –0.16 (–0.43 to 0.11)		*N* = 1 0.29 (–0.23 to 0.82)				
Epidural/nerve Block	D	0.03 (–0.37 to 0.43)	–0.32 (–1.52 to 0.84)	–0.26 (–1.58 to 0.98)			*N* = 1 0.42 (–0.08 to 0.92)				*N* = 1 0.83 (0.33 to 1.32)	*N* = 1 0.07 (–0.44 to 0.59)		
Chemonucleolysis	E	0.63 (–0.81 to 2.12)	0.28 (–0.47 to 1.02)	0.34 (–0.24 to 0.91)	0.60 (–0.78 to 2.03)									
Non-opioids	F	0.09 (–0.50 to 0.66)	–0.26 (–1.61 to 1.09)	–0.20 (–1.67 to 1.22)	0.06 (–0.57 to 0.69)	–0.54 (–2.10 to 1.02)								
Intraoperative interventions	G	0.13 (–1.17 to 1.57)	–0.21 (–0.79 to 0.39)	–0.15 (–0.49 to 0.18)	0.10 (–1.16 to 1.49)	–0.49 (–1.14 to 0.17)	0.05 (–1.39 to 1.56)							
Traction	H	–0.29 (–1.12 to 0.50)	–0.65 (–2.12 to 0.83)	–0.58 (–2.17 to 0.93)	–0.33 (–1.18 to 0.51)	–0.92 (–2.61 to 0.72)	–0.39 (–1.39 to 0.61)	–0.44 (–2.06 to 1.11)			*N* = 1 –0.52 (–1.15 to 0.11)		*N* = 1 0.46 (–0.54 to 1.45)	
Active PT	K	0.39 (–1.01 to 1.80)	0.03 (–0.68 to 0.75)	0.09 (–0.66 to 0.83)	0.36 (–0.99 to 1.72)	–0.25 (–1.20 to 0.70)	0.29 (–1.19 to 1.81)	0.24 (–0.59 to 1.06)	0.69 (–0.92 to 2.28)					

Treatment category	Treatment code	Treatment code A	B	C	D	E	F	G	H	K	L	M	N	P
Passive PT	**L**	–0.32 (–1.21 to 0.59)	–0.69 (–2.15 to 0.78)	–0.62 (–2.19 to 0.91)	–0.36 (–1.22 to 0.51)	–0.98 (–2.62 to 0.65)	–0.42 (–1.43 to 0.64)	–0.47 (–2.09 to 1.07)	–0.03 (–0.93 to 0.86)	–0.72 (–2.33 to 0.94)				
Biological agents	**M**	–0.44 (–1.19 to 0.30)	–0.79 (–2.21 to 0.57)	–0.71 (–2.24 to 0.70)	–0.48 (–1.22 to 0.28)	–1.05 (–2.69 to 0.48)	–0.53 (–1.47 to 0.40)	–0.57 (–2.16 to 0.89)	–0.15 (–1.23 to 0.96)	–0.83 (–2.38 to 0.69)	–0.12 (–1.25 to 1.04)			
Activity restriction	**N**	–0.80 (–2.46 to 0.79)	–1.18 (–3.17 to 0.83)	–1.10 (–3.16 to 0.93)	–0.84 (–2.48 to 0.78)	–1.45 (–3.54 to 0.66)	–0.89 (–2.62 to 0.80)	–0.95 (–3.04 to 1.11)	–0.52 (–1.92 to 0.91)	–1.21 (–3.30 to 0.88)	–0.47 (–2.13 to 1.18)	–0.36 (–2.15 to 1.35)		*N*=2 –0.15 (–0.37 to 0.06)
Education/advice	**P**	–0.65 (–2.40 to 1.04)	–1.02 (–3.10 to 1.04)	–0.96 (–3.11 to 1.13)	–0.70 (–2.44 to 1.03)	–1.30 (–3.49 to 0.91)	–0.74 (–2.58 to 1.05)	–0.81 (–2.98 to 1.33)	–0.37 (–1.89 to 1.19)	–1.06 (–3.24 to 1.11)	–0.32 (–2.11 to 1.45)	–0.22 (–2.09 to 1.61)	0.15 (–0.44 to 0.76)	

A, inactive control; B, usual care; C, disc surgery; D, epidural/nerve block; E, chemonucleolysis; F, non-opioids; G, intraoperative interventions; H, traction; I, manipulation; J, alternative/non-traditional; K, active PT; L, passive PT; M, biological agents; N, activity restriction; O, opioids; P, education/advice; Q, spinal cord stimulation; S, radiofrequency lesioning.

Lower triangle, MTC; *N*, number of studies; upper triangle, direct pair-wise comparison.

Statistically significant findings have been shaded.

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Appendix 10

Full summary of economic evaluations

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Dullerud, 1999[275] **Type of economic evaluation:** cost-effectiveness analysis **Currency/country:** $/USA **Cost year:** not stated **Perspective:** provider – Norwegian Ministry of Health and Social Affairs **Study population:** two cohorts of 68 patients with herniated discs treated with traditional macro-procedure operations compared with 90 patients receiving nucleotomy followed up for one year **Interventions:** percutaneous automated lumbar nuclectomy **Comparator:** macro-procedure discectomy	**Source of effectiveness data:** single study **Source of cost data:** combination of study data and literature sources	**Link between cost and effectiveness data:** retrospective/ disconnected **Clinical outcome measures and method of evaluation:** a clinical overall score (COS) was derived from pain intensity, physical examination, functional status according to ODI and consumption of analgesics. COS was defined as the weighted sum of these four subsets with a maximum score of 1000 (worst conceivable status) and 0 being best attainable treatment outcome. Comparison of 1-year outcome was used in the study **Direct costs:** operation costs, use of X-ray laboratory and other equipment (not specified), nucleotomy equipment **Productivity costs**: not stated **Resource use:** radiologist and radiographer fee, use of X-ray laboratory and other equipment **Discounting:** not presented **Modelling:** not presented	**Synthesis of costs and benefits:** the costs of primary and secondary treatment were calculated by (i) costs per successfully treated patient using COS as a dichotomous variable and (ii) costs relative to the reduction of COS as a continuous variable. Marginal costs per extra success obtained by one of the other alternatives compared with the other were also calculated **Statistical analysis:** no incremental analysis (ICER) undertaken **Sensitivity analysis:** not presented **Main results:** *Cost* Average cost per success in nucleotomy group is 36% that of surgery Cost per point reduction of COS in nucleotomy group is 40% reduction of surgical costs *Marginal costs* Average cost per surgical patient – US$6389 Average cost per nucelotomy patient – US$2272 Marginal cost per extra success choosing surgery as primary treatment – US$205,850 *Primary treatment only* Average cost per success per surgical patient US$7850 Average cost per success per nucelotomy patient US$2012	**Author's conclusions/implication for practice:** despite higher success rates in surgical discectomy than automated percutaneous nucleotomy, nucleotomy is significantly more cost-effective both in terms of primary cure and when secondary treatment is included Nucleotomy as a mini-invasive procedure with low complication rate and the potential of a quick recovery is more cost-effective than traditional surgical treatment for lumbar disc herniation

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Hansson, 2007[100] **Type of economic evaluation:** CUA **Currency/country:** $/USA **Cost year:** 1994–5 **Perspective**: societal **Study population**: 92 individuals who underwent surgery for lumbar disc herniation in a cohort of 1822 individuals, aged between 18–59 years, sick-listed at least 28 days owing to either low back pain or neck problems, selected consecutively in five regions of Sweden between 1994 and 1995 **Interventions (including comparator):** surgery because of lumbar disc herniation. Surgery group were individually matched to individuals treated conservatively for the same type of symptoms. Matching controlled for gender, age, diagnoses, pain distribution, pain intensity and the presence of sciatica	**Source of effectiveness data:** single study **Source of cost data:** not stated **Source of cost data:** single study	**Link between cost and effectiveness data:** prospective/concurrent **Clinical outcome measures and method of evaluation:** HRQoL using EQ-5D; functional restrictions due to back problems using the Hannover Activities of Daily Living questionnaire; pain experienced during past 6 months using the Von Korff pain scale **Direct costs:** primarily medical costs for then-current pack pain were estimated (appointments, admission, examination and treatment) over 2-year study period **Productivity costs:** cost of work absenteeism due to back pain estimated by multiplying total number of sick days listed by cost per time unit (monthly salary + employee payroll taxes converted to a daily cost). For those granted permanent disability during the study period, production loss calculated up until aged 65 years. A 5% discount rated and assumed annual increase in productivity of 1.5% was used to convert future years production loss to present values **Resource use:** resource use not specified **Discounting:** a 5% discount rate and an assumed annual increase in productivity of 1.5% were used to convert future years production loss to present values **Modelling**: not presented	**Synthesis of costs and benefits:** Costs of illness, HRQoL and cost–utility (QALY). Difference in utility between 28 days and 2 years used as the gain in QALY **Statistical analysis:** not presented. No incremental analysis (ICER) undertaken **Sensitivity analysis**: not performed **Main results:** *Cost of illness: mean direct costs* Surgical – US$10,311 Medical – US$2068 *Indirect costs* Surgical – US$32,807 Medical – US$42,570 *Total costs* Surgical – US$43,118 Medical – US$44,638 Direct costs accounted for 24% of the total costs for the surgical group and 5% for the nonsurgical group *Cost–utility* Surgical – cost US$43,119; median QALY 0.363 Non-surgical – cost US$44,638; median QALY 0.036 Difference – cost US$1520; median QALY 0.327 Cost per QALY – US$4648	**Author's conclusions/implications for practice:** total cost for surgical treatment of lumbar disc herniation during a 2-year period lower than non-surgical treatment. Direct cost of surgery was much higher than for non-surgical treatment, whereas the indirect cost was lower. Lower indirect costs were the effect of lower rates of reoccurrence of sick-listing episodes and permanent disability benefits. Surgery improved pain, back function and HRQoL to a greater extent than non-surgical treatments. The effects on HRQoL in combination with lower costs for surgery resulted in a better cost–utility for surgery Surgery for lumbar disc herniation is quite cost-effective

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Karppinen, 2001[171] **Type of economic evaluation:** cost-effectiveness analysis **Currency/country:** $/USA **Cost year:** 1998 **Perspective:** provider **Study population:** 160 Patients with unilateral sciatica (pain radiating dermatology from the back to below the knee) that had lasted 1–6 months, subgrouped on MRI as herniation or extrusion **Intervention:** periradicular infiltration with methylprednisolone 40 mg/ml bupivacaine 5 mg/ml **Comparator:** periradicular infiltration with 0.9% of a sodium chloride solution	**Source of effectiveness data:** single study **Source of cost data:** data from actual source **Source of cost data:** single study – data gathered from study questionnaires and medical records	**Link between cost and effectiveness data:** prospective/ concurrent **Clinical outcome measures and method of evaluation:** leg pain (VAS); straight leg raising and lumbar flexion (modified Schober's measure); pain distribution; MRI findings of disc morphology **Direct costs:** medicine costs; additional treatments. Visits to physiotherapists, osteopaths and physicians, back operations **Productivity costs:** days of sick leave **Resource use:** health service usage, home help **Discounting:** not reported **Modelling:** not presented	**Statistical analysis:** AUC analysis (adjusted for symptom duration). No ICERs presented **Sensitivity analysis:** not performed **Main results:** *Cost* Mean cumulative costs of periradicular infiltration per one responder *Subgroup analysis* Contained herniations vs extrusions Savings in home care (4 weeks) US$200 per patient (95% CI US$46 to US$355; $p=0.013$) Total costs (6 months) $1795 (95% CI US$1069 to US$2521; $p<0.001$) Therapy visits (4 weeks) significantly less $182 (95% CI US$79 to US$285; $p=0.001$) Contained herniations cost $1266 more per patient to obtain one painless patient in the saline group. For extrusions, the steroid treatment was more expensive: $4445 per painless patient	**Author's conclusions/implications for practice:** no significant differences observed between the treatment in terms of symptomatic disc level or ITT analysis. When analysed according to MRI classification, no significant differences seen at 3 months, but steroid option was significant at 1 year. Methylprednisolone 40 mg/ml bupivacaine 5 mg/ml is cost-effective for contained herniations, producing a saving of US$12,600 per responder

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Launois, 1994[277] **Type of economic evaluation:** cost-effectiveness analysis **Currency/country**: Francs/ France **Cost year:** 1990 **Perspective:** health-care provider and patient **Study population:** 146 patients who had undergone chemonucleolysis or surgery 2–3 months before data collection **Intervention:** chemonucleolysis **Comparator:** surgery (discectomy)	**Source of effectiveness data:** single study **Source of cost data**: combination of both **Source of cost data:** single study	**Link between cost and effectiveness data:** retrospective/ disconnected **Clinical outcome measures and method of evaluation:** clinician rating of the patients' condition at 3 months was undertaken using the Rosser–Watts classification of illness state. In addition, Dallas Pain Questionnaire and Health Measurement Questionnaire used to assess self-rated functioning **Direct costs:** direct medical costs were subdivided into: hospitalisation costs, physician services and drug costs. Best estimate of hospital true cost was obtained using the hotel approximation method for evaluating public hospitals. This assumes that hotel costs are evenly distributed over all inpatient days regardless of reason for admission. Costs included items such as administration, housekeeping, maintenance and general equipments, averaged over all in patient days for 1 year. Physician services included the cost of salaried physicians and nurses, pharmacy, laboratory and radiology use, equipment and supplies. Specific expenses directly related to the two procedures performed in the operation room were calculated using 'component enumeration method' involving two steps: (1) measurement of personnel time and (2) disposable equipment consumed in each intervention and assignment of monetary cost for resources consumed. Outpatient costs were estimated on the basis of prescriptions made at discharge including pharmaceutical and physiotherapy expenses and costs of follow-up medical treatments. Costs of medical services and drugs were based on French Relative Value Scale and retail prices, respectively **Productivity costs:** not collected **Resource use:** resource use considered as part of direct costs **Discounting:** no discounting referred to in method, but results give discounted QALYs in results	**Synthesis of costs and benefits:** **Statistical analysis:** Krukall–Wallis Test was used to compare Rosser–Watts QoL coefficients on clinical outcomes and Pearson correlation coefficients were determined between four Dallas scores and Rosser–Watts QoL coefficients. Incremental cost–utility ratio was calculated by dividing the difference in utility between the two treatments giving the extra gain per QALY per extra French franc (FF) spent through switching from one treatment to another No ICERs presented **Sensitivity analysis:** not performed **Main results:** *Cost* Total cost was FF15,400 for discectomy, FF800 for chemonucleolysis Additional discounted cost per patient of discectomy compared with chemonucleolysis was FF9126 Additional discounted benefits at 7 years associated with chemonucleolysis was 0.142 years of life (52 days) per patient *QoL* Disectomy patient scores 65 patient-years in those with initial success (87%). Of these, 60 patient-years owing to initial success sustained at 7 years and 5 patient years owing to successful reoperation Individual probability of a patient being in good health at year 7 was 0.84 following chemotherapy vs 0.65 following disctectomy In discectomy group with initial success, 44.24 potential life years were lost bacause of a reduction in QoL vs 27.36 in chemonucleolysis cohort	**Author's conclusions/implications for practice:** although surgical discetomy may produce slightly better immediate clinical results than chemonucleolysis with chymopapain, evaluation of costs and benefit up to 7 years after intervention, identified additional benefit in factor of chemonucleolysis, owing mostly to results from post-chymopapain surgery offering a second chance to these patients

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
		Modelling: a decision model as designed to schematise events according to physician choice or dictated by natural course of events. The tree involved two major branches: surgical treatment and chemonucleolysis. For each treatment short-term (1 year) and long-term (2–7 years) events were set. Distribution of events over time were made according to two rules: (1) deteriorations appearing within a period of time were assumed to occur midway though it; and (2), reoperations because of recurrent pain were assumed to take place after 3 months (i.e. 0.25 years) of failed medical treatment. For a cohort of 100 patients, the number of years or year fractions of good or bad health were cumulated at 7 years. In a given year and for 100 patients, the potential years of life are equal to 100 patient-years of which x are in good health and 100 patient-years of which x are in poor health		

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Luijsterburg, 2007[278] **Type of economic evaluation:** cost-effectiveness analysis **Currency/country:** Euro (€) **Cost year:** 2005 **Perspective:** societal **Study population:** 135 patients with acute lumbosacral radicular syndrome (sciatica) from participating GPs (112) in the Rotterdam and surrounding area who were participating in an RCT to evaluate the effectiveness of PT and GP care **Interventions:** PT + information (GP care) **Comparator:** GP care	**Source of effectiveness data:** single study **Source of cost data:** single study	**Link between cost and effectiveness data:** prospective/concurrent **Clinical outcome measures and method of evaluation:** the primary outcome measure was GPE rated on seven-point scale from 1 (completely recovered) to 7 (vastly worsened); dichotomised as improved vs not improved. GPE rated as percentage of patients that reported to be improved. This was considered a disease-specific outcome. The secondary outcome was QoL, measured by the EQ-5D (considered the generic measure of health) **Direct costs:** direct health-care costs were costs of PT, GP care, medication and additional visits to other health-care providers. Direct (non-health-care) costs were costs of devices, out-of-pocket expenses and costs of help in housekeeping **Productivity costs:** costs of production losses caused by absence from work **Resource use:** differences in resource utilisation were assessed between the two study arms; costs were calculated by multiplication of each unit of resource use by its unit price **Discounting**: not reported **Modelling:** not performed	**Synthesis of costs and benefits:** global perceived effect, HRQoL (EQ-5D) **Statistical analysis:** the ICER on total costs and direct costs only, between both study arms, was constructed. CIs calculated via parametric (Fieller's method) and non-parametric (bootstrapping methods), and presented using a cost-effectiveness acceptability curve **Sensitivity analysis:** variations in cost or health effect were included in the bootstrapped estimated of the ICER **Main results** *Cost* Costs (direct and indirect) shown at 3, 6, 12 and 52 weeks. Consisted of mainly production losses Significant differences between groups on costs for PT in favour of control group at all time points Total direct and indirect costs statistically significant in favour of control group at all time points *Cost-effectiveness* ICER for direct costs €837 (95% CI –€732 to €3186) per improved patient gained ICER for total costs €6224 (95% CI –€10,419 to €27,551) per improved patient gained Cost-effectiveness acceptability curve *Direct costs* Threshold of €600 per patient improved, ICER acceptable with 35% certainty Threshold of €1200 per patient improved, ICER acceptable with 69% certainty *Total costs* Threshold of €4000 per patient improved, ICER acceptable at 37% Threshold of €12,000 per patient improved, ICER acceptable at 68%	**Author's conclusions/implications for practice:** the treatment of patients with LRS with PT and GP care is not more cost-effective than GP care alone

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Malter, 1996[279] **Type of economic evaluation:** cost-effectiveness analysis **Currency/country:** $/USA **Cost year:** 1993 **Perspective:** health payers (health insurer) **Study population:** patients who had herniated lumbar discs unresponsive to conservative therapy, who undergo lumbar discectomy. Data was derived from two RCTs: (1) 126 patients receiving medical vs surgical treatment for radicular pain unresponsive to conservative therapy; and (2) 106 patients randomly assigned to receive chemonucleolysis or placebo. An ongoing cohort study of medical treatment vs discectomy was used to examine the effect of replacing the chemonucleolysis data as this may be less effective than discectomy	**Source of effectiveness data:** review/ synthesis **Source of cost data:** combination of both **Source of cost data:** review/ synthesis	**Link between cost and effectiveness data:** retrospective/ disconnected **Clinical outcome measures and method of evaluation:** analysis was based on the proportions of medical and surgical patients with self-reported good, fair, poor or bad outcomes at 1-, 4- and 10-year follow-up **Direct costs:** costs were identified from MEDSTAT a commercially available database which included patients <65 years from all 50 US stages by commercial insurers, Blue Cross/Shield and self-insured businesses. Claims were reported as charges reimbursed that were used as proxies for costs. All claims submitted by 1.3 million individuals from January 1987 to December 1989 were available for analysis **Productivity costs:** not presented **Resource use:** Rates service utilisation determined from commercially available database **Cost data handled appropriately:** discounting was at 5% per year **Modelling:** base-case model. The mean TTO value was calculated for each level of recovery and self-assessed outcomes reported in the RCTs were weighted	**Synthesis of costs and benefits:** cost-effectiveness was defined as the non-discounted incremental cost of surgical vs medical treatment per QALY gained **Statistical analysis**: cost and effects were determined from data from different sources **Sensitivity analysis:** estimates for cost, efficacy and QoL were varied simultaneously. Efficacy varied from <25% to 25% more than the main estimate based on the consistency of base-case and secondary analysis. For estimates of changes in QoL associated with symptom resolution, a broader range (±50%) was used to account for the uncertainty. Incremental costs associated with surgery were varied from the insurance-based estimate to the HMO estimate **Main results:** the probability of a good outcome varied between 0.36 and 0.56 after medical treatment and between 0.64 and 0.70 after discectomy. For a poor outcome, the probability varied between 0.06 and 0.20 after medical treatment and between 0.07 and 0.14 after discectomy QoL values associated with a good outcome were 0.95, with a fair outcome 0.77, with a poor outcome 0.62 and with a bad outcome 0.50 During the 10 years after surgery, the average surgical patient experienced 8.7 QALYs whereas the average medical patient experienced 8.27 QALYs, with the difference of 0.43 representing the non-discounted improvement in QALYs associated with surgery Total costs for the 18-month interval beginning 6 months before diagnosis were US$17,020 for the surgical group compared with US$4470 for the medical group. The non-discounted cost-effectiveness ratio of surgical over medical therapy was US$29,200 per QALY Cost-effectiveness of discectomy remained < US$100,000 as long as surgery produced an incremental quality-adjusted benefit of at least 0.125 years	**Author's conclusions/implications for practice:** for carefully selected patients with herniated discs, surgical discectomy is a cost-effective treatment. Discectomy's favourable cost-effectiveness results from its substantial effect on QoL and moderate cost

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Manca, 2008[280] **Type of economic evaluation:** cost-analysis **Currency/country:** £/UK **Cost year:** 2005–6 **Perspective:** health-care provider **Study population:** 100 patients participating in the PROCESS (Prospective, randomised controlled multicentre study of patients with failed back surgery syndrome) trial. Patients ≥ 18 years suffering from predominant neuropathic pain of radicular origin in the legs with or without associated less severe back pain were included **Interventions:** spinal cord stimulation (SCS) **Comparator:** conservative medical management (CMM)	**Source of effectiveness data:** single study **Source of cost data:** literature and published sources **Source of cost data:** single study	**Link between cost and effectiveness data:** prospective/concurrent **Clinical outcome measures and method of evaluation:** HRQoL using the SF-36 and EQ-5D measured at baseline, 3 months and 6 months after initiation of treatment **Direct costs:** unit costs were calculated using UK and Canadian figures. The total cost of each element of resource consumption was estimated by obtaining country-specific unit costs from published sources and literature. Equipment and consumables were costed using manufacturer list prices and drug prices from each national drug formulary. Inpatient stay were estimated using fully allocated cost figures whereas non-drug therapies were costed using published tariffs and literature **Productivity costs:** not recorded **Resource use:** health-resource data were prospective collected for each patient using case report forms. Resource data were collected on preimplant screening and implant (time of theatre, use of hardware, length of hospital stay and type of ward); use of medications; non-drug therapy; complications (SCS and non SCS complications including those related to CMM were recorded). In addition, SCS-specific health-care utilisations such as additional surgery, initial hospitalisation and readmission to overcome complications and non-invasive tests were collected Where necessary, cost figures were up-rated for inflation using the national health-care specific price indexes. Total costs for resource use were calculated by multiplying resource use by the relevant national average cost. Canadian dollars and UK sterling are presented as these were the two largest recruiters to the trial. Euros are reported by converting the Canadian figures with the euro exchange rate at the time of writing the paper. Use of Canadian prices (one currency only) for conversion into euros was undertaken because of the differences in prices between the two countries, converting total costs in UK sterling and Canadian dollars would lead to different total cost estimates **Discounting:** not performed **Modelling:** not performed	**Synthesis of costs and benefits:** costs and HRQoL outcomes are presented separately **Statistical analysis:** not presented **Sensitivity analysis:** not performed **Main results** The 6-month mean total costs in the SCS group were significantly higher (£15,081) than the CMM group (£3573), with a statistically significant adjusted differential mean cost of £11,373. However, the gain in HRQoL with SCS over the same period was considerably greater in this group with a mean EQ-5D score difference of 0.25 ($p < 0.001$) and 0.21 ($p < 0.001$), respectively at 3 months and 6 months after adjustment for baseline characteristics	**Author's conclusions/implications for practice:** addition of SCS to CMM in patients resulted in higher costs to health-care systems, but generated important improvements in patients EQ-5D over the same period

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Price, 2005[173] **Type of economic evaluation:** CUA **Currency/country:** £/UK **Cost year:** 2002–3 **Perspective:** health-care provider and purchaser **Study population:** 228 patients listed for ESIs with clinically diagnosed unilateral sciatica aged between 18 and 70 years, who had a duration of symptoms between 4 weeks and 18 months. Part of a pragmatic prospective multicentre RCT with a 12-month follow-up **Interventions (including comparator):** up to three injections of epidural steroid and local anaesthetic into the interspinous ligament Injections of normal saline into the interspinous ligament	**Source of effectiveness data:** single study **Source of cost data:** data from actual source **Source of cost data:** single study	**Link between cost and effectiveness data:** prospective/concurrent **Clinical outcome measures and method of evaluation:** functional outcome (ODI functional outcome); health status (SF-36); pain (VAS and McGill questionnaire); psychological functioning [Hospital Anxiety and Depression Scale (HADS) score]; analgesic intake; physical function (using standardised objective tests); objective measures of sciatic root irritation and neurological deficit, procedural side effects **Direct costs:** NHS recharge costs calculated to identify costs from the purchaser perspective (Southampton Trust). Average prices charged to patients were based on total costs of service (including overheads) **Productivity costs:** *Resource use* Real resource costs calculated to identify costs from the provider perspective. A pilot was done to inform method of data collection. Resource-use data were collected through the use of a self-completion record on which all clinical staff recorded resources they used inclusive of their own time. Specifically time in patient consultation, aiding the patient before or after the consultation and time associated with patient administration for all patients presenting for the sciatica not included in the trial. Pathology and radiology use was collected. Data were collected across all three centres during July–October 2000 Cost data were used to calculate a cost per patient for treating sciatica with epidural injections from the perspective of health-care provider and purchaser. An average cost per patient was based on two management practices. Under each management practice it was assumed that patients had an initial consultation and follow-up. Owing to the short time horizon of when costs and benefits were incurred, discounting was not performed	**Synthesis of costs and benefits:** QALYs were derived from SF-6D health utility scored using SF-36 raw data using the Brazier *et al.*[288] technique **Statistical analysis**: CUA was undertaken using SG to derive incremental cost per QALY for managing a patient with an ESI **Sensitivity analysis:** sensitivity analysis was undertaken to explore how cost estimates change, given the assumptions that underlay resources resource base costs are relaxed. Sensitivity analysis was not undertaken for purchaser costs	**Author's conclusions/implications for practice:** although ESI are relative safe, they confer only transient benefits in symptoms and self-reported function in a small group of patients with sciatica at substantial costs. ESI's failed the QALY threshold recommended by NICE and do not represent good value for money if NICE recommendations are followed The study did not find a place for ESI in early stages of the disease. ESI's only conferred a short-term benefit only and no predictors of response. They did not defer surgery and short-term repeat injections made no difference. The resource savings could be substantial even with a modest change to treatment. For example (from the purchaser's perspective), the saving from moving from an assumed model of current pragmatic practice (maximum of three ESI's) to a patient management strategy suggested by the trial (one ESI) would represent a saving of £16,505,700 in the sector

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Shvartzman, 1992[62] **Type of economic evaluation:** CUA **Currency/country:** $/USA **Cost year:** 1989 **Perspective:** purchaser **Study population:** 55 white male truckers who presented with an acute episode of sciatica between 1985–9, who after 3 months of conservative therapy were categorised as equivocal to undergo surgical or medical treatments based on study eligibility criteria **Interventions (including comparator):** surgery ($n=25$); conservative treatment after initial rehabilitation ($n=30$)	**Source of effectiveness data:** single study **Source of cost data:** single study	**Link between cost and effectiveness data:** retrospective/disconnected **Clinical outcome measures and method of evaluation:** functional (work-related) and perceptual (subjective opinion) criteria based on the Mayo Clinic System. Each patient was graded in all outcomes; therefore, total points accumulated reflected the overall outcome. A scoring system was devised (good 0–1, satisfactory 2–3 and poor ≥ 4). Reference made to comparing outcomes to a typical patient in the literature, but no reference given **Direct costs:** medical costs for surgery: hospital costs, surgeon's fee, anaesthesia, radiology, office visits and follow-up rehabilitation. Medical costs for conservative treatment: office visits, radiology and physical rehabilitation **Productivity costs:** not considered **Discounting** not reported **Modelling**: not reported	**Synthesis of costs and benefits:** utility scores were derived from treatment outcomes and 'quality adjusted' with a modified utility scale. Utility scores were multiplied by corresponding number of outcomes to make them quality adjusted **Statistical analysis:** cost-effectiveness was measured by net health-care costs/net health-care effectiveness = sum of all costs for all patients in both modalities/1 × (number of good outcomes) + 0.7 × (number of satisfactory outcomes) + 0.15 × (number of poor outcomes) **Sensitivity analysis:** not specified **Main results:** average medical compensation and costs given per patient following date of injury (1985–9) *Total costs* Surgical US$56,054 Conservative US$53,638 *Average 5-year medical costs* Surgical US$26,643 Conservative US$16,572 *Average 5-year cost-effectiveness calculated* US$64,700/adjusted outcome for surgical group US$60,700/adjusted outcome for conservative group	**Author's conclusions/implications for practice:** cost of effectiveness for both treatment modalities was US$63,000 ± US$2000 adjusted outcomes The authors state that patients who do not respond to an initial 3-month trial of PT, should not be managed aggressively if they have not deteriorated. The option to undergo surgery or conservative treatment should remain with the patient

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Stevenson, 1995[281] **Type of economic evaluation:** cost-minimisation **Currency/country:** £/UK **Cost year:** 1992 **Perspective:** provider **Study population:** 71 patients participating in an RCT of automised percutaneous lumbar discetomy (APLD) vs initial microsdiscetomy (IMD) in the treatment of contained lumbar herniation **Intervention:** patients treated by APLD **Comparator:** patients treated with IMD only	**Source of effectiveness data:** single study **Source of cost data:** data from actual source **Source of cost data:** single study	**Link between cost and effectiveness data:** prospective/ concurrent **Clinical outcome measures and method of evaluation:** outcomes were assessed by two clinicians (one masked to treatment method) on a four point scale: 1 = poor, 2 = fair, 3 = good and 4 = excellent **Direct costs:** comprehensive costing schedules prepared from observation of the two surgical procedures and postoperative care. Included time spent by staff of different grades, drugs, disposables and capital equipment. Capital consumption and hospital overhead expenditures allowed **Productivity costs:** employment status, income in and out of work, compensation claims **Resource use:** medical and social service usage, private expenses were also collected **Discounting:** not reported **Modelling:** not reported	**Statistical analysis**: not reported **Sensitivity analysis:** not reported **Main results:** IMD £1506 APLD £752 Total cost APLD £71,812 (average of £2317 per patient) Total cost IMD £62,665 (average of £31,567 per patient) *Cost per outcome* IMD – 32 successful outcomes, total cost £62,665 APLD – 22 successful outcomes, total cost £71,812 Average cost per IMD successful outcome (£1958) was 60% of average cost per APLD successful outcome £3264	**Author's conclusions/implications for practice:** within the restrictions imposed by the dataset, automated percutaneous lumbar discetomy was less cost-effective than microdiscetomy If conclusion is replicated, it has strong resource implications for al health systems where cost-effectiveness and cost containment is a matter for concern

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
Tosteson, 2008[282] **Type of economic evaluation:** cost-effectiveness analysis **Currency/country:** $/USA **Cost year:** 2004 **Perspective:** health payer (Medicare) and societal **Study population:** men and women, aged ≤ 18 years and diagnosed with intervertabral disc herniation. All had symptoms for at least 6 weeks **Interventions (including comparator):** standard open laminectomy/laminectomy with removal of herniation and examination of the involved nerve route Non-operative usual care chosen individually by patients and physicians	**Source of effectiveness data:** pooled data from an RCT and observational cohorts from SPORT study **Source of cost data:** data from actual source **Source of cost data:** single study	**Link between cost and effectiveness data:** prospective/concurrent **Direct costs:** direct costs at each time point were measured by self-reported instances of medical resource use × unit costs for each cost component. Unit costs for office visits, hospitalisations, diagnostic tests and procedures were based on 2004 Medicare national allowance payment amounts. Medication prices were based on 2004 Red Book prices.[287] Surgery costs depended on procedure performed and complications, these determined the diagnostic related group. Associated costs were assigned in two ways. First a cost paid by non-Medicare insurers was estimated at 70% of mean amount billed to Medicare in 2004. Second, the observed 2004 Medicare mean total diagnosis-related group price was used to reflect hospital-related costs for those ≥ 65 years of age. Surgeon costs were based on 2004 Medicare allowable amounts, using the resource-based relative value scale and anaesthesiology costs were estimated using operative time with a fixed amount of time added for postacute care. For non-spine surgical hospitalisations, costs were based on the diagnosis-related group and priced using mean observed Medicare 2004 prices for each admission **Productivity costs:** productivity losses due to spine-related problems (e.g. missed work days for those employed outside the home and missed home working days for those who reported housekeeping as their primary activity) were recorded. Use of unpaid care giving (including spousal care giving) was obtained. Costs were estimated using the standard human capital approach. Costs for missed days of housekeeping and unpaid care givers were valued based on average wages plus non-health benefits for individuals aged ≥ 35 years. **Resource use:** resource data included health-care visits (surgeons, chiropractors, other physicians, physical therapies, acupuncturists or other health-care providers); spine-related diagnostic tests; injections; devices (braces, canes, walkers, shoe inserts, etc.) emergency room visits; rehabilitation or nursing home days; paid caregiver; medications; and surgery	**Synthesis of costs and benefits:** HRQoL using EQ-5D to generate QALYs **Statistical analysis**: AUC analysis was formed to estimate difference in QALYs between the surgical and non-operative treatments, adjusted to a common baseline value. For costs, the adjusted mean 30-day difference in rates at 6 weeks, 3, 6, 12 and 24 months, was used to form a mean difference in total costs over 2 years by multiplying each adjusted rate by corresponding time interval between visits and summing to obtain total costs in each treatment group. To estimate and ICER CI, bootstrap methods were used from 100 samples taken, with replacement from the original sample with the individual as the unit of observation **Sensitivity analysis:** sensitivity analysis was undertaken to assess the impact of assumption and analytical approach to cost-effectiveness results. This included the impact of limiting costs to direct medical costs or direct medical costs, plus costs of work loss for those employed in the workforce. **Main results:** Total mean discounted QALYs were 1.64 (95% CI 1.62 to 1.67) for surgical patients and 1.44 (95% CI 1.4 to 1.47) for non-operative patients; a difference of 0.21 (95% CI 0.16 to 0.25) Total mean costs were US$27,273 (95% CI US$26,009 to US$28,644) for surgical patients and US$13,135 (95% CI US$11,244 to US$14,902) for non-operative patients. Total direct costs were US$20,237 (95% CI US$19,314 to US$21,160) for surgery and US$5804 (95% CI US$4639 to US$6969) for non-operative patients Total loss of productivity costs were US$7089 (95% CI US$6155 to US$8022) for surgical patients and US$7399 (95% CI $6221 to US$8577) for non-operative costs The cost per QALY gained for surgical treatment relative to non-operative care in the general population was US$69,403 (95% CI US$4923 to US$94,999) For those aged ≥ 65 years, the cost per QALY gained decreased to US$34,355 (95% CI US$20,419 to US$25,512)	**Author's conclusions/implications for practice:** surgery for intervertabral disc herniation was moderately cost-effective when evaluated over 2 years. The estimated economic value of surgery varied considerably according to the method used for assigning surgical costs Surgical treatment of herniated disc represents a reasonably cost-effective health-care intervention when compared with other common health-care interventions

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
		Discounting: all costs were adjusted for inflation. A 3% annualised discount rate was used in the analysis of both costs and QALYs **Modelling:** to complete the CEA, the two cohorts were combined and analysed according to treatment received using regression models for longitudinal data via generalised estimating equations. Separate models for fit for the EQ-5D and 30-day cost rates were measured. Mean costs over each interval were summed to provide estimates of total mean costs for each treatment group. The treatment indicator was a time dependant covariate allowing for variable surgery time. This would have the effect of incorporating the non-operative experience of patients who postponed surgery beyond 3 months from enrolment. Because of the allowable windows for scheduled visits and crossover, the actual time for outcome assessment varied – this was included as an adjusting variable in the regression, to adjust for potential confounding baseline variables associated with missing data or treatment were included as covariates	Limiting costs to direct costs alone for general population (US$72,181, 95% CI US$56,473 to US$92,394) and Medicare (US$37,285, 95% CI US$28,364 to US$48,993) or direct costs with lost work days (general population US$77,300, 95% CI US$60,009 to US$99,544) or Medicare (US$42,111, 95% CI US$30,976 to US$56,284) had little change This also had little impact on the ICER which was estimated at US$33,176 (95% CI US$18,348 to US$54,157) under Medicare pricing	

Study details	Source of data	Method for estimation of benefits/costs	Results/statistical analysis	Recommendations
van den Hout, 2008[283] **Type of economic evaluation:** CUA **Currency/country:** Euro (€) **Cost year:** 2008 **Perspective:** societal perspective, but sensitivity analysis considered societal and health-care perspective **Study population:** 283 patients aged 18–65 years enrolled in a multicentred randomised trial who had sciatica for 6–12 weeks caused by lumbar disc herniation **Interventions (including comparator):** early surgery vs 6 months of usual conservative care	**Source of effectiveness data:** single study **Source of cost data:** data from actual source **Source of cost data:** single study	**Link between cost and effectiveness data:** prospective/concurrent **Direct costs:** cost diaries completed by patients were used to report hospital admissions, visits (by health-care professional), home care, paid domestic help, informal care. Out of pocket expenses. Prices were obtained from 75 Dutch hospitals; with the two highest and lowest excluded. A cost structure was applied by converting average price E2357 admission to hospital plus E390 per bed day. Average stay was 3.7 days and adding cost of related specialist visits resulted in average cost per hospital stay equal to average diagnosis-treatment price. For other health-care costs, Dutch standard prices were used **Productivity costs:** hours of absenteeism from work – this was valued according the human capital method at standard cost **Resource use:** included in direct costs **Discounting:** discounting not applied as only 1-year follow-up **Modelling:** base-case CUA compared societal cost at 1 year with QALYs at 1 year based on UK EQ-5D. No further time horizons considered	**Synthesis of costs and benefits:** QALYs derived from patient-reported QoL, collected using the EQ-5D and SF-36 (from which SF-6D utilities were calculated) **Statistical analysis:** followed ITT principle. Cost-effectiveness acceptability curves were produced. CIs for cost–utility ratios were calculated **Sensitivity analysis:** sensitivity analysis carried out only on use of different utility measures (UK EQ-5D, US EQ-5D, SF-6D or VAS and on the included cost categories (societal or health-care perspective) **Main results:** the differences in QALYs reported according to the utility measure used were: UK EQ-5D 0.044 (95% CI 0.0005 to 0.083); US EQ-5D 0.032 (95% CI 0.005 to 0.059); SF-6D 0.024 (95% CI 0.003 to 0.0046) and VAS 0.032 (95% CI –0.003 to 0.066) From the perspective of the health-care system, total health-care costs remained significantly higher than prolonged conservative care, with a difference in costs of €1819 (95% CI €842 to €2790) per patient Total societal costs were –€12 (95% CI –€4029 to €4006) slightly in favour of early surgery The probability that early surgery is cost-effective compared with conservative care varies with willingness to pay From a societal perspective it was 76% at €40,000 per QALY and was 87% at €80,000 per QALY From the health-care perspective, according to the UK EQ-5D and US EQ-5D, the incremental cost per QALY gained with early surgery was estimated at €41,000 (95% CI €14,000 to €430,000) and €57,000 (95% CI €19,000 to €436,000), respectively	**Author's conclusions/implications for practice:** faster recovery from sciatica makes early surgery more cost-effective than prolonged conservative care. The estimated differences in health-care costs were acceptable and were compensated for by the difference in absenteeism from work. For a 'willingness to pay' ceiling ratio of €40,000 or more per QALY, early surgery need not be withheld for economic reasons

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Appendix 11

Study protocol

The effectiveness and cost-effectiveness of management strategies for sciatica: systematic review and economic model

Introduction

Research is needed to identify the most clinical effective and cost-effective management strategies for sciatica. Many treatment modalities for sciatica have been evaluated in placebo controlled trials (or usual care used as the comparator) and the evidence relating to the direct comparison of numerous treatment modalities are missing. In addition, in clinical practice a sequential stepped care approach, using different treatment modalities is considered useful. However, primary studies have tended to examine individual treatments given in isolation, rather than sequential, stepwise treatment provision. The optimum sequence of treatment modalities and what sequence is best for which patients are therefore not known. In order to evaluate this, comparative estimates of the effectiveness of the different interventions, conditional on the administration of previous interventions, is required. Multiple treatments may also be administered sequentially in the hope of additive effects in combined therapy; therefore, the additive and interaction effects of multiple interventions also needs to be explored. Previous systematic reviews have found evidence for the effectiveness of invasive treatments such as ESI, chemonucleolysis and lumbar discectomy, but found insufficient evidence to advise bed rest, keeping active, analgesia, intramuscular steroid injection or traction. None of the reviews made indirect comparisons across separate trials or examined cost-effectiveness. Previous economic evaluations that have been conducted vary quite considerably, and their value is limited to the perspective and setting for which they were undertaken. We therefore plan to undertake a systematic review of the clinical effectiveness and cost-effectiveness of different management strategies for sciatica, which tries to address some of these issues. We will also develop a decision-analytic model to assess the cost-effectiveness of different treatment modalities from the UK perspective.

Research objectives

- To undertake a systematic review of the clinical effectiveness and cost-effectiveness of different management strategies for sciatica.
- To synthesise the results using meta-analyses and a MTC method.
- To construct an appropriate probabilistic decision-analytic model to estimate costs per QALY gained for each treatment strategy.
- To make recommendations for clinical practice and commissioning in the UK NHS.

Background

Definition of sciatica

Sciatica is a symptom defined as unilateral, well-localised leg pain, with a sharp, shooting or burning quality that approximates to the dermatomal distribution of the sciatic nerve down

the posterior lateral aspect of the leg (and normally radiates to the foot or ankle). It is often associated with numbness or paraesthesia in the same distribution.[1,2] The symptom of sciatica is used by clinicians in different ways. Some refer to any leg pain referred from the back as sciatica; others prefer to restrict its use to pain originating from the lumbar nerve root. Some authors prefer to use the term 'lumbar nerve root pain' to distinguish it from referred leg pain.[3]

Epidemiology of sciatica

The lack of clarity in the definition of sciatica persists in the epidemiological literature. In a UK study, the prevalence of 'sciatica suggesting a herniated lumbar disc' was reported as 3.1% in men and 1.3% in women.[4] However, like most surveys, this study did not use strict criteria to diagnose sciatica. A large population survey in Finland which did found a lifetime prevalence of 5.3% in men and 3.7% in women.[5] Sciatica accounts for < 5% of the cases of low back pain presenting to primary care.[3] Some cohort studies have found that most cases resolve spontaneously, with 30% of patients continuing to experience troublesome symptoms at 1 year, 20% out of work and 5–15% requiring surgery.[6,7] However, another cohort found that 55% still had symptoms of sciatica 2 years later and 53% after 4 years (which included 25% who had recovered after 2 years but had relapsed again by 4 years).[8] The cost of sciatica to society in the Netherlands in 1991 was estimated at US$128M for hospital care, US$730M for absenteeism and US$708M for disablement.[9]

Pathological mechanism

Sciatica caused by lumbar nerve root pain usually arises from a prolapsed intervertebral disc, but also from spinal stenosis or surgical scarring.[7] It was initially thought to occur predominantly as a result of compression of the nerve root,[10] leading to neural ischaemia, oedema (which would in turn lead to chronic inflammation), scarring and perineural fibrosis. However, it is now known that symptoms can occur in the absence of direct nerve root compression, possibly as a result of release of proinflammatory factors from the damaged disc. Pain occurs because of chronic, repetitive firing of the inflamed nerve root.[11,12] Referred leg pain occurs because pain fibres from paraspinal structures and from the leg converge on interneurons in the spinal cord and brain, so that nociceptive input from painful paraspinal tissues is perceived as leg pain.

Clinical diagnosis

It has been claimed that nerve root pain can be distinguished from referred leg pain because it is unilateral, radiates below the knee, results in leg pain that is worse than back pain, can be aggravated by coughing or sneezing and has a segmental distribution. Important clinical signs include provocation tests for dural irritation, such as a limited SLR reproducing the leg pain, and compromised nerve root function leading to reduced power, sensation or reflexes in one nerve root.[3] A systematic review of the diagnostic value of history and physical examination in nerve root pain found that pain distribution was the only useful item in the history. The SLR test was the only sensitive sign in the physical examination, but had poor specificity; the crossed SLR test was the only specific sign, but had poor sensitivity.[13] However, another review found that there was no standard SLR procedure, no consensus on interpretation of results and no evidence of intra- and inter-observer reliability, and its predictive value in lumbar intervertebral disc surgery was unknown.[14]

Treatments

A variety of surgical and non-surgical treatments have been used to treat sciatica and have been the subject of previous systematic reviews, the findings of which are summarised below. However, none of the reviews examined the cost-effectiveness of the various treatment modalities.

Two sets of guidelines on the management of sciatica from 1994 recommend initial conservative management with advice, reassurance and analgesia if there is no major or progressive motor

weakness, and urgent referral for specialist assessment and investigation if symptoms are not resolving satisfactorily after 6 weeks.[2] If strong physiological evidence of a specific nerve root dysfunction with intervertebral disc herniation is confirmed at the corresponding level and side by findings on an imaging study, surgical options can be discussed. Standard discectomy or microdiscectomy is the surgical treatment of choice.[15] More recent guidelines have concentrated on non-specific low back pain and have not discussed the management of sciatica. This review will inform the development of up-to-date management recommendations by other groups.

Bed rest and advice to stay active

Most cases resolve spontaneously, and traditionally bed rest has been advised. A Cochrane systematic review of bed rest[16] found high-quality evidence of little or no difference in pain or functional status between bed rest and staying active; moderate-quality evidence of little or no difference in pain intensity between bed rest and physiotherapy, but small improvements in functional status with physiotherapy; and moderate-quality evidence of little or no difference in pain intensity or functional status between 2–3 and 7 days' bed rest. A Cochrane systematic review of advice to keep active reviewed the same trials comparing bed rest with activity and came to the same conclusions. Although there is no evidence to advise bed rest for sciatica, there is also very little evidence of benefit for advice to keep active.[17]

Analgesia

Most patients will obtain analgesic medication either on prescription or 'over the counter' from their pharmacist. A systematic review of conservative treatment for sciatica identified three RCTs that compared NSAIDs with a placebo tablet and found no evidence of efficacy.[18]

Intramuscular steroids

Part of the mechanism for producing nerve root pain is by release of proinflammatory factors from damaged discs, so administration of intramuscular corticosteroid steroid injections to reduce inflammation of the nerve root has a theoretical basis. The systematic review of conservative treatment for sciatica identified two RCTs comparing steroid injections with a placebo injection and found no evidence of efficacy.[18]

Traction

Traction is used relatively frequently to treat sciatica in North America, but less frequently in the UK, Eire and the Netherlands.[19,20] A Cochrane systematic review found strong evidence that there was no significant difference between either continuous or intermittent traction versus placebo, sham or mixed treatments.[21]

Epidural steroids

Introduction of corticosteroids into the epidural space is a commonly used treatment for lumbar nerve root pain, with the rationale of reducing nerve root inflammation. It was performed on 47,665 occasions in the NHS in England in 2005–6.[22] A systematic review of ESIs compared with saline, local anaesthetic injection or dry needling reported that six RCTs found epidural steroids to be better than a control treatment whereas six RCTs found them to be no better or worse. The methodological quality of these RCTs was criticised.[23] A further systematic review that examined selective nerve root blocks, excluding epidurals given by the caudal route, found five RCTs (one of high quality) providing moderate evidence that nerve root blocks were more effective than a local anaesthetic or saline injection.[24] Since then, an RCT funded by the HTA[25] found that ESI resulted in a small, transient improvement in function and pain, compared with placebo, 3 weeks after injection, but no relative improvement after 6 weeks and 1 year. This RCT also performed a health economic analysis; none of the cost per QALY estimates was below the implied NICE ceiling of £30,000 per QALY gain.

Spinal manipulation

The systematic review of conservative treatment for sciatica identified two RCTs of spinal manipulation. One found that manipulation was more effective than placebo and another found no difference when compared with manual traction, exercises or corset.[18]

Chemonucleolysis

Chemonucleolysis is a technique that attempts to decrease the volume of a disc herniation by reducing the amount of material contained within the nucleus pulposus by injecting the enzyme chymopapain. A systematic review of lumbar discectomy and percutaneous treatments found three RCTs that compared chymopapain with placebo injection found greater symptom relief in the group that received chymopapain.[26]

Lumbar discectomy

Between 5% and 15% of patients with lumbar nerve root pain are treated with surgery,[6,7] usually involving a lumbar discectomy. In the NHS in England in 2005–6, 8683 lumbar discectomies were performed.[22] A Cochrane systematic review of surgery for lumbar disc prolapse[27] found 26 RCTs, but only one compared discectomy with conservative management. Meta-analyses have shown that surgical discectomy produces better clinical outcomes than chemonucleolysis, which is better than placebo. Three RCTs found no difference in clinical outcomes between microdiscectomy and standard discectomy, but in three other studies both microdiscectomy and standard discectomyproduced better results than percutaneous discectomy. The review concluded that there was considerable evidence of the clinical effectiveness of discectomy for carefully selected patients with sciatica caused by lumbar disc prolapse that fails to resolve with conservative management. Serious complications from lumbar disc surgery are uncommon, with a mortality rate of 0.3%, and infection rate of 3.0% and 4.0% requiring an intraoperative transfusion. Surgery fails to relieve symptoms in 10–20% of cases.[26]

Other treatments

There are a number of other treatments that have not been included in previous systematic reviews, for example complementary therapies such as acupuncture. These will be included in the proposed review.

Pattern of treatments

Overall, there is no close correlation between symptom severity and pathology in sciatica. Increasing distance between onset and effective treatment has an unfavourable influence on symptoms and disability. While there is reason to suppose that a stepped care approach to sciatica could be helpful, the application of the various available treatments depends more on availability, clinician preference and socioeconomic variables than patient needs. In practice, some patients will recover under an analgesic cocktail while on a waiting list, some will be offered surgery as a first line intervention and yet others will receive a combination of treatments in no particular order. With few exceptions, it would appear that the patients attending differing treatment approaches are clinically indistinguishable. This set of issues will be central to the proposed review and synthesis.

Sources of heterogeneity in studies of sciatica

We anticipate that the review will find a diverse set of studies. Some of the potential sources of heterogeneity includes the following.

Diagnostic heterogeneity

As discussed in the introduction, sciatica is a symptom rather than a strict pathological label. Many of the studies will include patients with referred leg pain as well as nerve root pain. Stricter diagnostic criteria including findings from imaging studies are used more in surgical

compared with non-surgical trials. Similarly, when nerve root pain is responsible, causes other than prolapsed intervertebral discs are more likely to be included trials that do not use imaging findings as inclusion criteria.

Treatment group heterogeneity

Different treatments are likely to include different patient groups because of the diagnostic heterogeneity discussed above. Treatments that are further up the gradient of invasiveness (e.g. disc surgery), are more likely to be used in patient populations with fewer cases of referred leg pain, longer duration of symptoms, greater degree of disability and psychosocial morbidity, particularly if patients are receiving treatments in a sequential manner.

Heterogeneity of co-interventions

Co-interventions vary between trials testing the same intervention as well as between different interventions. For example, postoperative management after lumbar disc surgery is inconsistent with regard to postoperative restrictions, reactivation and return to work.[28]

Heterogeneity of health-care provision

There is wide variation in the management of sciatica between countries in terms of the use of primary care,[3] the rate of disc surgery[29] and social security provision.[30]

Heterogeneity of outcome measures

The relative importance of the various outcomes (e.g. pain, disability, work status, costs) varies across groups of stakeholders (patients, clinicians, providers) and can change over time. For example, during the initial stages the patient may value pain relief, but with time functional status may become more important. This will be considered during both review and synthesis.

Systematic review method

The review will follow the methodology reported in CRD report *Undertaking systematic reviews of research on effectiveness: CRD's guidance for those carrying out or commissioning reviews*.[31] Studies examining effectiveness and those evaluating cost-effectiveness will be reviewed separately.

Literature search

The following databases will be searched for published, semi-published and grey literature:

- MEDLINE
- MEDLINE In-Process & Other Non-Indexed Citations
- EMBASE
- Cumulative Index to Nursing and Allied Health Literature (CINAHL)
- PsychINFO
- Allied and Complimentary Database (AMED)
- Health Management Information Consortium (HMIC)
- British Nursing Index
- BIOSIS
- Cochrane Central Register of Controlled Trials (CENTRAL)
- Database of Abstracts of Reviews of Effects (DARE)
- Cochrane Database of Systematic Reviews (CDSR)
- Health Technology Assessment (HTA) Database
- NHS Economic Evaluation database (NHS EED)
- Science Citation Index

- Social Science Citation Index (SSCI)
- Index to Scientific & Technical Proceedings (ISTP)
- System for Information on Grey Literature In Europe (SIGLE)
- Inspec
- Physiotherapy Evidence Database (PEDro).

The search strategy for MEDLINE (via OVID) is presented in *Appendix 1* and will be translated for use on other databases. No language or date restrictions will be used.

The following trial registries will be searched to identify any further completed or ongoing trials:

- National Research Register (NRR)
- National Institute for Health's ClinicalTrials.gov database
- CenterWatch Clinical Trials Listing Service
- Current Controlled Trials (CCT).

The following conference proceedings will be searched by hand where feasible (pending availability) for the last 5 years:

- EuroSpine
- International Society for the Study of Spine
- BritSpine
- North American Spine Society.

The journal *Spine* will also be searched by hand for the last 5 years.

Reference lists of previous systematic reviews and included studies will be screened and citation tracking undertaken where feasible.

The results of the searches will be entered onto the reference management software, ENDNOTE. Articles written in a language other than English will be translated whenever possible. Multiple publication of the same study will be identified, grouped together and represented by a single reference.

Methods of study selection

Planned inclusion/exclusion criteria

Criteria	Clinical effectiveness	Cost-effectiveness
Study design	RCTs and non-RCTs, as well as controlled observational studies	Economic evaluations conducted alongside trials, modelling studies and analyses of administrative databases will be included if they compare two or more treatments and consider both costs and consequences (including cost-effectiveness, cost–utility, cost–benefit and cost-consequences analysis). Cost-analysis undertaken as part of a comparative study, where data on both costs and consequences are reported, but not combined will also be included
Patient population	Adults with sciatica or lumbar nerve root pain diagnosed clinically or confirmed by imaging. The essential clinical criterion is leg pain worse than back pain. Other clinical criteria that support the diagnosis include: unilateral leg pain; pain radiation below the knee; aggravated by cough/sneeze; segmental distribution; provocation tests (e.g. impaired SLR); reduced power, sensation or reflexes in one nerve root. Studies that include participants with low back pain will be included if the findings for patients with sciatica are reported separately; studies where the results are not reported separately for sciatica, will be excluded. Studies of specific conditions such as spinal stenosis or discogenic pain will only be included if it is documented that leg pain is worse than back pain. If imaging has been used it must demonstrate evidence of nerve root irritation	

Criteria	Clinical effectiveness	Cost-effectiveness
Interventions	Any	
Comparators	Any placebo, manual, medical, or surgical treatment for sciatica	
Outcomes	Any relevant patient-based outcome measure such as pain, disability, functional status, adverse effects, health status, QoL, analgesic use, operation rates, health utility, return to work, health service use and costs. Biochemical outcomes and biomechanical measurements (e.g. change in disc space) will be excluded	Any outcome measure

Assessing relevancy of included studies

Two reviewers will independently screen the titles and abstracts identified by the electronic searches for relevancy. Potentially relevant studies will be ordered and assessed for inclusion, using the criteria reported above, by two independent reviewers. Disagreements during both stages will be resolved by discussion or if necessary taken to a third reviewer.

Further literature needed to inform the economic model

As well as searching for clinical effectiveness and cost-effectiveness studies, we will systematically search for epidemiological studies and case series with long-term follow-up data that will inform the economic model. We will also search for studies that identify the type of treatment strategies being used in practice, report prevalence data, provide information on the probability of moving to different states, give estimates of duration in different states, report information on utilities or identify the type of outcome measures that are of importance to patients, clinicians or policy makers. The model will also use resource data from the NHS including costs, tariffs and unit costs, available from national sources.

Quality assessment

Quality assessment will be undertaken by two independent reviewers with differences being resolved by consensus or by a third reviewer if necessary. Data relating to quality assessment will be inputted onto a Microsoft Access database.

Effectiveness studies

The quality of included trials and observational studies will be assessed using a checklist based on the one used by the 'Back Review Group' of the Cochrane Collaboration for RCTs[32] and the one developed by the Hamilton Effective Public Health Practice Project (EPHPP) Team for quantitative studies (which includes both comparative observational studies and RCTs).[33] The checklist is presented in *Appendix 2*. The criteria cover selection bias and confounding, detection bias, performance bias and attrition bias. Criteria relating to external validity have also been added.

The quality checklist will be used to describe the overall quality of individual studies and the likelihood of bias, and will not be used to calculate an overall quality score. Alternatively the robustness of the quality assessment will be assessed using sensitivity analyses, which will examine the influence of the following individual criteria: randomisation, concealment of allocation, blinding of outcome assessment and loss to follow-up ≤ 80%.

Economic evaluations

The quality of the cost-effectiveness studies will be assessed according to an updated version of the checklist developed by Drummond *et al.* (see *Appendix 2*).[34] The checklist reflects the criteria for economic evaluation detailed in the methodological guidance developed by NICE. For studies based on decision models, the critical appraisal will be based on the checklist developed by Weinstein *et al.* (see *Appendix 2*).[35]

Data extraction

Data will be extracted using predefined forms developed on a Microsoft Access database. Separate forms will be used for clinical effectiveness studies and cost-effectiveness studies; these will be piloted on a small selection of relevant studies in advance and adjusted if necessary. Multiple publications of the same study will be identified and collated. Data will be extracted by one reviewer and checked against the original paper by a second independent reviewer. Any disagreements will be resolved by discussion, or by a third reviewer if necessary.

Data extraction for effectiveness studies

Study location and setting, description of study population (including method of diagnosis and previous treatment), type of intervention and control used, how allocation was performed, outcome measures used and results with sufficient information (such as proportions, means, SDs, SEs, significance levels, CIs, NNTs) to estimate effect sizes wherever possible.

Data extraction for cost-effectiveness studies

Type of economic evaluation, specific details about the interventions being compared, study population, time period, measures of effectiveness, direct costs (medical and non-medical), productivity costs, resource use, currency, results and details of any decision modelling and sensitivity analysis.

Methods of analysis/synthesis

Effectiveness studies

The findings will initially be subdivided according to the different treatment modalities. The results of data extraction and quality assessment will be presented in structured tables and also as a narrative summary. Ongoing studies will be reported separately and the potential impact of their findings will be discussed.

Meta-analysis and metaregression

This will be conducted for each treatment comparison for which there are compatible multiple studies and each outcome measure (including separate analyses for short- and long-term follow-up). Random effects will be included in the modelling[36] when between-study heterogeneity is present as ascertained by examining (chi-squared and *I*-squared) statistics.[37] The results of these will be presented using forest plots, subgrouping results by study design. In an attempt to explain any between-study heterogeneity, metaregression will be conducted.[38] This will examine: the influence of characteristics of study design (year, location, randomisation, concealment of allocation, blinding of outcome assessment, > 80% follow-up); patient characteristics (mean age, gender proportion); diagnostic heterogeneity (inclusion criteria including physical examination or imaging findings); symptom duration; level of disability and psychosocial morbidity (from baseline measures of health status); failed previous treatment; and use of co-interventions. In addition, a sensitivity analysis excluding any non-randomised studies from the analysis will be conducted to assess the influence of the lower quality evidence on the conclusions. For all comparisons for which there are more than five studies, funnel plots together with associated tests,[39,40] will be considered to assess the potential for publication bias.

Mixed treatment comparison

Since it is anticipated that not all treatment comparisons of interest will have been evaluated in controlled studies, we will then synthesise all RCTs that form a closed network,[41] using a MTC synthesis methodology.[42] This allows the estimation of all treatment comparisons of interest, without breaking within-study comparisons and hence randomisation where it exists.[43] Particular care will be taken to ensure treatment regimens are comparable in studies used for the direct and indirect estimation within the model. Informal comparisons between the estimated effects from the individual (direct-comparison) meta-analyses and the MTC model will be made, and more

formal assessments of the coherence and consistency of the evidence network will be made using deviance information criteria and related statistics,[44] as calculated by the Bayesian WinBUGS software. Important covariates identified from the metaregression analyses that explain between-study heterogeneity will be included in the MTC model. Novel modelling will also be developed and used to acknowledge issues relating to sequential intervention effects and other specific issues relating to sciatica treatment. The MTC model will then be further extended by including non-trial data for those comparisons for which there is no available data from RCTs. Information on study quality will be incorporated to take into account the use of data from imperfect sources.[45] It is anticipated that the MTC modelling approach will give estimates of the parameters required for the economic decision model.

Economic evaluations

Details of each published economic evaluation, together with a critical appraisal of its quality, will be presented in structured tables and narrative summary. Where appropriate and where the data presented permit, indications of the uncertainty underlying the estimation of the differential cost and effects of the alternative treatment options will be summarised.

Other parameters for the economic evaluation

Previous experience of conducting meta-analyses and associated cost-effectiveness modelling, indicates that outcome measures that are of most clinical relevance and interest, are not necessarily the outcomes that are most compatible and relevant to the economic model. Therefore, early in the project, those carrying out the evidence synthesis will liaise closely with the decision modellers to ensure syntheses that are required for the decision model are conducted.

In addition to the syntheses to estimate clinical effectiveness, further syntheses may be desirable to estimate other parameters in the economic decision model.[46]

Cost-effectiveness modelling

It is likely that the existing evidence relating to the cost-effectiveness of treatments, will have a number of limitations that make it insufficient to inform decision-making regarding the most appropriate management strategy for patients with sciatica. Thus, it will be necessary to construct an appropriate probabilistic, decision-analytic model to address a number of these issues more formally. This model will provide a framework for the synthesis of data from the clinical effectiveness, economic reviews and other relevant sources. It will be developed to estimate costs from the perspective of the UK NHS and personal social services[47,48] and health outcomes in terms of QALYs gained for the range of relevant treatment strategies. (If the findings of the literature review indicate that patients value different outcomes to those of policy makers and clinicians, then the model will be developed using two iterations, including one from the patient perspective.) The number of appropriate and relevant health states will be informed by the results of the service provider survey (see *Telephone survey of service providers*), the literature review and from advice within the research team. The cost of managing patients within each state will be reflected in the model, while it is not envisaged that patient progression will be seamless, or indeed linear and uni-directional. The structure of the model will reflect this and the probability of movement between health states will be based on the evidence from the literature review, including the distribution around the point estimates. In addition, a sensitivity analysis will be used to assess the impact of 'changes' in the variable estimates and identify potential areas for future research. A probabilistic sensitivity analysis will assess the extent to which any one particular strategy is likely to be within the bounds of what is considered to be cost-effective.

The model will incorporate a range of time horizons. It is proposed that a probabilistic model be constructed to ensure that uncertainty can be appropriately characterised depending on the range of comparators included in the analysis.[49] Given that mean costs and QALYs gained will therefore be estimated with uncertainty, the outputs from the simulations will be used to generate cost-effectiveness acceptability curves for the alternative analyses. These curves detail the probability that each intervention is cost-effective over a range of potential maximum values that the health service is prepared to pay for an additional QALY.[50] The budgetary impact (again from a NHS perspective), will also be assessed as part of the health economic evaluation.

The findings of the model will be contrasted with other economic evaluations identified by the review, which will also be used to test the inputs and assumptions made in our model.

Telephone survey of service providers

Approximately 30 service providers, known to the advisory group members, will be contacted by telephone to determine their usual clinical practice, the usual treatment pathways and if they use a stepped care approach. This information will be used to inform which sequence of treatments to include in the economic model.

Previously conducted systematic reviews will be used to generate a list of potential treatments for sciatica. During the telephone interviews, clinicians will be asked initially what treatments (including combination and sequence of treatments) they usually use, and afterwards, if prominent treatments identified from previous reviews are not mentioned, they will be asked if they have ever considered using these.

Recommendations for practice and research

Recommendations for practice

We will make recommendations for practice based on what is feasible within the UK NHS setting. The importance of sequential therapies and a stepped care approach will also be considered, with recommendations being made about possible optimum care pathways. We will make comparisons between clinical resolution and return to work.

Recommendations for further research

The overall findings of the review will be used to make recommendations for further research, including details (such as optimal comparator treatments) of the types of trials that would make important contributions to the existing evidence base.[51] The modelling will inform future research recommendations using 'value of information' methods, which equate the cost of further research to the cost of improved decision making that could be done as a result of having the further information. In particular we will use 'expected value of perfect information' to estimate the benefit of having perfect information on all parameters in the model, in order to give an upper bound on the payoff of further information. Additionally, the findings of the quality assessment of the existing comparative studies evaluating treatment effectiveness, will be used to make recommendations about how to improve conduct of such studies in the future.

The findings of previous systematic reviews, which are based on standard meta-analyses, will be compared with ours to see if using the data from observational studies and the additional modelling work results in different conclusions being made.

Project management

Study management

A study management group will be formed, it will be responsible for overseeing the progress of the study throughout all of its phases and will meet regularly (every 1–2 months). The day-to-day management of the study will be co-ordinated through the study co-ordination centre (Wrexham). The reviewing team (Wrexham) and the team conducting the economic evaluation (Swansea) will meet as and when is required by teleconference. A steering committee will be held every 3–6 months. Data monitoring and quality assurance will be overseen by the steering group.

Steering group

The review team as a whole will form a steering group, which will meet every 3–6 months. The role of the steering group will be to ensure that the study is conducted to a rigorous standard and to make any necessary strategic decisions. Members of the group will also be responsible for approving the protocol and ensuring that the study adheres to it; provide information support (such as answering methodological and clinical queries) to those conducting the review or economic analysis; identify relevant studies that the literature searches may have missed; assist with the analysis and interpretation of the findings; and approve of the final report and any subsequent publications.

Service users

The review team (steering group) includes a number of service users, which includes clinicians working in the field and a patient representative. The clinicians include general practitioners (NW, CW), osteopaths (NW, KB), a spinal surgeon (IB) and a musculoskeletal physician (RC). The patient representative will be IR who has undergone spinal surgery. A second patient representative who has not undergone surgery will be recruited with the help of the Clinical Research Collaboration Cymru Involving People /Cynnwys Pobl, patient, service user and carer network. Service user representatives will be able to help us ensure the appropriateness of the research question (and inclusion/exclusion criteria), provide input on the type of data to be extracted from primary studies and provide input on the interpretation of the findings.

Dissemination

A final report will be submitted to the funding body. Papers will be submitted to high-quality journals and presented at national and international conferences.

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Feedback

The HTA programme and the authors would like to know your views about this report.

The Correspondence Page on the HTA website (www.hta.ac.uk) is a convenient way to publish your comments. If you prefer, you can send your comments to the address below, telling us whether you would like us to transfer them to the website.

We look forward to hearing from you.

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