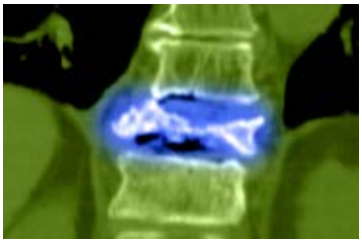
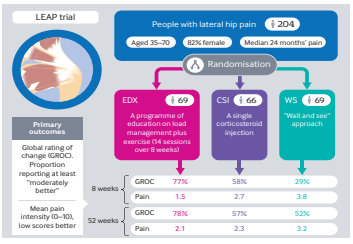
research

Rare diseases in newborns: use of systematic review evidence associated with reduced probability of screening recommendations p 189



Vertebroplasty no better than sham procedure for pain control in acute osteoporotic fractures p 190



Load management better than corticosteroid injections or a wait and see approach in gluteal tendinopathy p 192

ORIGINAL RESEARCH Systematic review and meta-analysis

Association between use of systematic reviews and national policy recommendations on screening newborn babies for rare diseases

Taylor-Phillips S, Stinton C, Ferrante di Ruffano L, Seedat F, Clarke A, Deeks JJ

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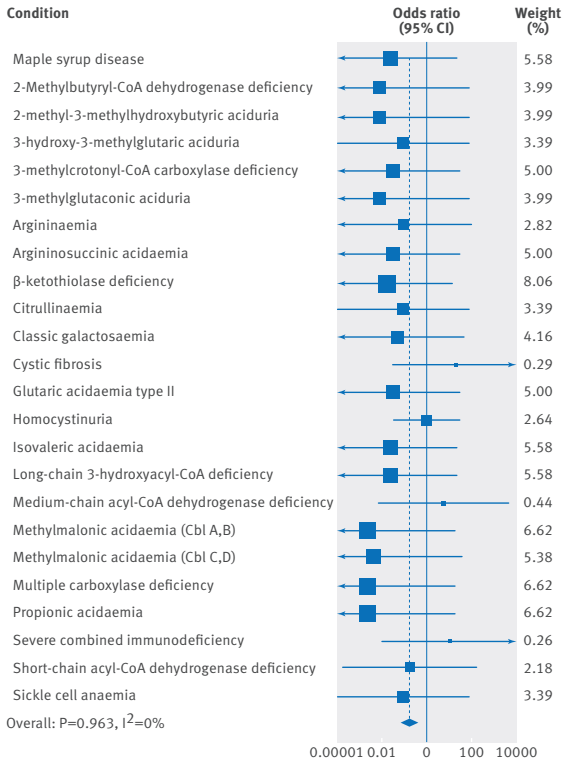

Forest plot of odds of recommending screening in decisions that included compared with did not include evidence from systematic reviews. Overall effect estimate from fixed effects meta-analysis with a 0.1 zero cell correction

Study question Do national recommendations on screening newborn babies for rare diseases include systematic reviews of the evidence and consider evidence on key benefits and harms of screening, and are these associated with the final recommendation of whether to implement screening?

Methods The authors systematically searched national screening policy websites for documents relating to a recommendation of whether or not to screen for any condition using the newborn blood spot test. Two reviewers independently extracted data. The odds of recommending screening according to the use of systematic review methods was estimated across conditions using meta-analysis.

Study answer and limitations 78% of screening recommendations (216/276) were made without a systematic review having been undertaken, and the use of a systematic review was associated with a reduced probability of screening being recommended (38% *v* 63%, odds ratio 0.17, 95% CI 0.07 to 0.43). The key limitation was the potential for the use of systematic review methods to act as a proxy for unmeasured country level confounders.

What this study adds This study suggests that many national policy reviews of screening for rare conditions using the newborn blood spot test do not assess the evidence on the key benefits and harms of screening: 42% of recommendations did not take account of the evidence on accuracy of blood spot tests, 36% did not review the evidence for whether early treatment improves health outcomes, and 76% did not consider the evidence around the potential harm of overdiagnosis. Use of a systematic review of the evidence by policy makers was associated with reduced probability of screening being recommended.

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No more vertebroplasty for acute compression fractures?

ORIGINAL RESEARCH Randomised sham controlled clinical trial

Vertebroplasty versus sham procedure for painful acute osteoporotic vertebral compression fractures (VERTOS IV)

Firanescu CE, de Vries J, Lodder P, et al

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Study question Does vertebroplasty for the treatment of acute osteoporotic compression fractures of the vertebral body result in more pain relief than a sham procedure?

Methods 180 general community patients older than 50 years of age with one recent osteoporotic vertebral compression fracture or more were randomly assigned to vertebroplasty (subcutaneous lidocaine (lignocaine) and bupivacaine at each pedicle along with cementation) or a sham procedure (subcutaneous lidocaine and bupivacaine at each pedicle). The main outcome measure was mean reduction in visual analogue scale (VAS) pain scores at one day, one week, and one, three, six, and 12 months after the procedure. Clinically significant pain relief was defined as a decrease of 1.5 points in VAS scores from baseline.

Study answer and limitations The mean reduction in VAS score was statistically significant in both groups at all follow-up points after the procedure compared with baseline. The mean difference in VAS scores between groups was 0.20 (95% confidence interval −0.53 to 0.94) at baseline, −0.43 (−1.17 to 0.31) at one day, −0.11 (−0.85 to 0.63) at one week, 0.41 (−0.33 to 1.15) at one month, 0.21 (−0.54 to 0.96) at three months, 0.39 (−0.37 to 1.15) at six months, and 0.45 (−0.37 to 1.24) at 12 months. These changes in VAS scores did not differ statistically significantly between the groups during 12 months' follow-up. The trial has

Mean visual analogue scale (VAS) scores for vertebroplasty and sham procedure groups at each time point

	Mean VAS scores (95% CI)		
Time points	Vertebroplasty (n=90)	Sham procedure (n=86)	Group difference
Baseline	7.72 (7.21 to 8.24)	7.92 (7.40 to 8.45)	0.20 (−0.53 to 0.94)
1 day	5.24 (4.73 to 5.76)	4.82 (4.29 to 5.34)	−0.43 (−1.17 to 0.31)
1 week	4.38 (3.86 to 4.90)	4.27 (3.74 to 4.79)	−0.11 (−0.85 to 0.63)
1 month	3.32 (2.80 to 3.84)	3.73 (3.20 to 4.26)	0.41 (−0.33 to 1.15)
3 months	2.69 (2.16 to 3.21)	2.90 (2.35 to 3.44)	0.21 (−0.54 to 0.96)
6 months	3.02 (2.48 to 3.55)	3.41 (2.86 to 3.96)	0.39 (−0.37 to 1.15)
12 months	2.72 (2.18 to 3.26)	3.17 (2.60 to 3.75)	0.45 (−0.37 to 1.24)
Difference between baseline and 12 months	5.00 (4.31 to 5.70)	4.75 (3.93 to 5.57)	0.13 (−0.41 to 0.66)

COMMENTARY Fresh evidence shows no benefit for fractures under 9 weeks old

Vertebral compression fractures associated with osteoporosis can cause acute pain. Long term, these fractures can lead to deformity, respiratory problems, and loss of height.[1] The increased kyphosis causes problems with mobilisation, eating, sitting, sleeping, and looking forward.

Previous studies have reported conflicting results on the effectiveness of treating acute osteoporotic compression fractures with percutaneous injections of bone cement.[2] Vertebroplasty—the injection of acrylic bone cement into fractured vertebrae—was first performed in France in 1984. Initially designed to treat painful tumour deposits, vertebroplasty for osteoporotic compression fractures became more widespread in the US in the 1990s. Its use expanded throughout the world. Since then, vertebroplasty has been at the centre of a longstanding controversy about benefits, risks, and cost effectiveness.[3]

Firanescu and colleagues report a well constructed randomised trial of 180 older adults with 1-3 painful vertebral compression fractures of up to six (later nine) weeks' duration.[4] The findings confirmed that vertebroplasty is no more effective for pain relief than local anaesthetic injections into the same area (the sham procedure given to controls). Vertebroplasty had no effect on quality of life or on disability. All outcomes were measured over 12 months. The authors did not recruit an untreated control group, so both treatments are potentially better than nothing for pain relief. If so, local anaesthetic injections seem cheaper, are likely safer, and equally beneficial.

> For most patients with fragility fractures, the initial treatment is conservative

This trial suggests that vertebroplasty should not be offered to patients with three or fewer painful osteoporotic vertebral fractures of less than 6-9 weeks' duration. A recent Cochrane review confirms this finding.[5] This trial does not, however, inform the treatment of patients with pain that persist longer than nine weeks, and the reasons for persistence might be multifactorial. But for most patients with fragility fractures, the initial treatment is conservative; even those with severe pain normally improve within six weeks. The complications of vertebroplasty are rare but potentially catastrophic. Patients may experience spinal cord injury or pulmonary embolism from cement leakage at the time of the procedure.[6 7]

Known unknowns

Fragility fractures cause deformity as well as pain and seem to be associated with an increased mortality from respiratory disease.[8] Importantly, no long term trials have evaluated whether vertebroplasty performed at any stage improves long term outcomes such as deformity and mortality when combined with medical treatment of osteoporosis. Increased mortality associated with vertebral fragility fractures might be due to increased risk of fractures at other sites such as the hip. Adults with vertebral fracture often have poor overall health, and a surgical intervention in isolation is unlikely to change prognosis.

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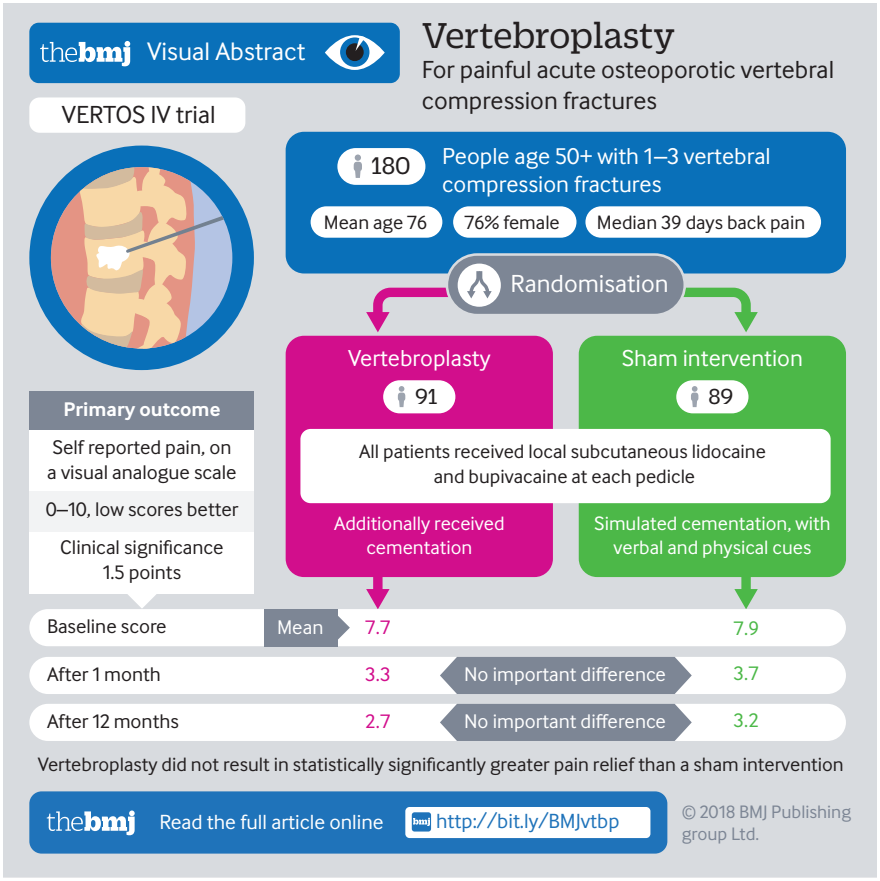

several limitations: it lacked an additional control group that received standard medical conservative treatment, the study groups were not compared for other medical treatments that might have affected outcomes, the persistence of pain after intervention or sham intervention might indicate causes other than a fracture, such as osseous or disc degenerative disease, and no screening logs were kept for patients who refused participation, which can suggest a selection bias towards recruitment of patients with lesser degrees of pain and disability.

What this study adds Percutaneous vertebroplasty did not result in clinically significantly more pain relief than a sham intervention during 12 months' follow-up. The results of this trial do not support percutaneous vertebroplasty as standard pain treatment in patients with acute osteoporotic vertebral compression fractures.

Funding, competing interests, data sharing This study was supported by Stryker (grant No S-I-013). JAH has received consulting fees from Medtronic and Globus as well as serving on a data and safety monitoring board of a study sponsored by Codman Neurovascular. The dataset is available from the corresponding author (crisfiranescu@hotmail.com).

Even so, not treating the spinal deformity associated with fragility fractures might be associated with a higher mortality in the long term. Although vertebroplasty does not seem to be any more beneficial than local anaesthetic in the acute management of spinal pain, it remains to be seen whether improving and preventing progressive spinal kyphosis is associated with an improvement in long term quality of life and disability.[9] Cement augmentation for patients with multiple myeloma or those near the end of life with vertebral metastasis should be considered separately, as good evidence shows that vertebroplasty reduces pain in these conditions.[10-12]

The trial by Firanescu and colleagues gives patients, caregivers, and providers reliable information about the place of cement augmentation in the management of acute osteoporotic vertebral fractures. However, questions remain on its place in the management of chronic painful fractures, and, more specifically, whether cement augmentation has any role in the prevention of long term morbidity and mortality. These are fruitful areas for further research but require well constructed trials looking at all aspects of care in this patient group.

Future trials should take full account of the comorbidities that often accompany osteoporotic vertebral fractures in older patients. All too often surgeons and radiologists consider the fracture as an isolated injury rather than part of a bigger and much more complex picture of compromise that caused the fracture in the first place.

The National Institute for Health and Care Excellence guidance on osteoporotic vertebral compression fractures states that percutaneous vertebroplasty and kyphoplasty should be offered only to people with severe ongoing pain after a recent unhealed vertebral fracture despite optimal pain management, and whose pain has been shown to be at the level of the fracture by physical examination and imaging.[13] Firanescu and colleagues' trial suggests that early vertebroplasty—before nine weeks—should probably be considered only in exceptional circumstances for patients with vertebral osteoporotic fractures.

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ORIGINAL RESEARCH Randomised clinical trial

Education plus exercise *v* corticosteroid injection use *v* a wait and see approach on global outcome and pain from gluteal tendinopathy

Mellor R, Bennell K, Grimaldi A, et al

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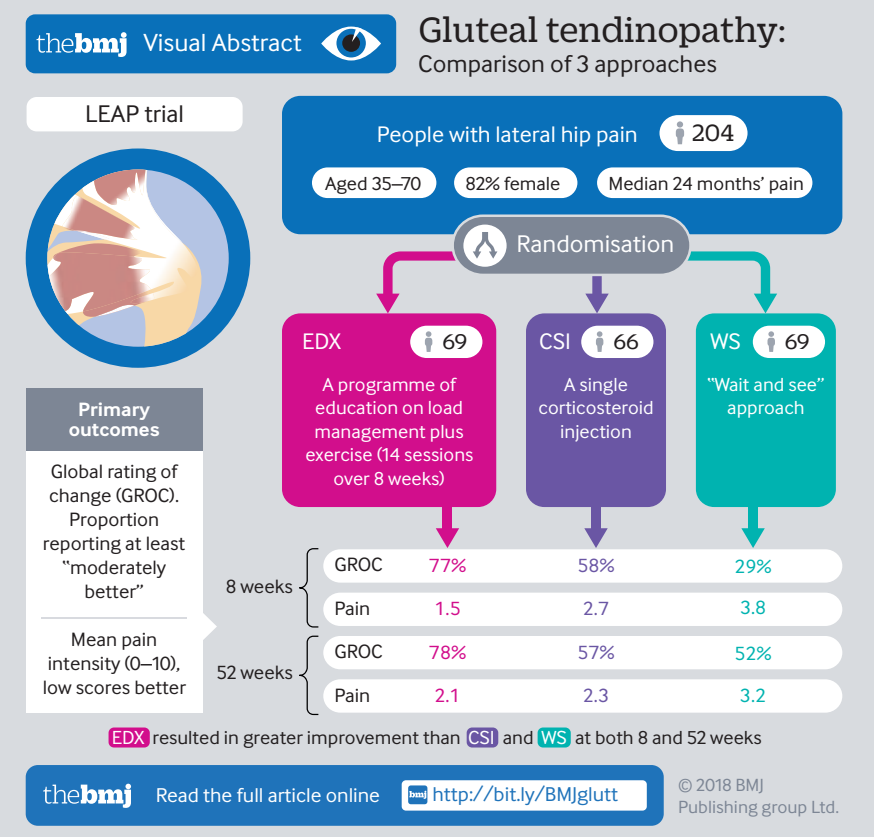
Study question Which is better at treating gluteal tendinopathy—a programme comprising load management education and exercise, a single corticosteroid injection, or no treatment?

Methods Participants were enrolled from Brisbane and Melbourne, Australia, aged 35-70 years, and with lateral hip pain for more than three months, at least 4/10 on the pain numerical rating scale, and gluteal tendinopathy confirmed by clinical diagnosis and magnetic resonance imaging. Participants were allocated to a physiotherapy led education and exercise programme of 14 sessions over eight weeks (EDX; n=69), one corticosteroid injection (CSI; n=66), or a wait and see approach (WS; n=69). Participants rated global change in hip condition and pain severity, primarily at eight and 52 weeks.

Study answer Of 204 participants enrolled (including 167 women; average age 55 years), 189 (93%) completed 52 week follow-up. At eight weeks, global improvement was reported by 51/66 EDX, 38/65 CSI, and 20/68 WS participants. EDX and CSI had greater success rates in global change than WS (risk difference 49.1% (95% confidence interval 34.6% to 63.5%), number needed to treat 2.0 (95% confidence interval 1.6 to 2.9); 29.2% (13.2% to 45.2%), 3.4 (2.2 to 7.6); respectively). EDX performed better than CSI and WS at 52 weeks (20.4% (4.9% to 35.9%); 4.9 (2.8 to 20.6); 26.8% (11.3% to 42.3%); 3.7 (2.4 to 8.8); respectively). For reported pain at eight weeks, EDX had the best results, followed by CSI and then WS. At 52 weeks, reported pain did not differ between EDX and CSI, although both had less reported pain than WS.

What this study adds This study provides evidence of efficacy of a load management programme for gluteal tendinopathy, showing that it produces greater rates of global improvement than corticosteroid injections, and far greater benefits than a wait and see approach.

Funding, competing interests, data sharing Full details provided with online article at bmj.com



AUTHORS' PERSPECTIVE
Bill Vicenzino, Rebecca Mellor, Alison Grimaldi

The benefits of the LEAP programme

Gluteal tendinopathy, or lateral hip pain, is prevalent and affects quality of life. Consensus for successful treatment focuses on load management, which was delivered as an education and exercise package in the LEAP trial. The trial also compared education plus exercise with corticosteroid injection use and with a wait and see approach.

Alison George, a trial participant, contacted us after undergoing the education and exercise programme. She was a typical patient with persistent gluteal tendinopathy (postmenopausal, high body mass index, weak hip abductors) and magnetic resonance imaging findings of gluteus medius and minimus insertional tendinopathy.

Alison said: "I volunteered on the basis of nothing to lose. I felt old for my age, led a sedentary life, and had walked with a lot of hip pain for many years. Placed in the physiotherapy group, the reality of having to exercise, and regularly, was a shock. The sessions eased me into the exercises, which I continued at home. I was surprised by the reduction in pain achieved in a relatively short period of time. I was more surprised that the ongoing reduction in pain became the inspiration to never go back to 'ground zero.'

"I found the support, encouragement, and help to complete the exercises properly to be invaluable. The professional guidance and corrections to my technique in those early weeks meant I never forgot how to do them properly."

Alison reported that she was much better and has continued to remain pain-free. She now participates regularly in pilates and fit boxing.

While the LEAP trial studied a specific education and exercise programme, against widely used corticosteroid injection and control, it remains unknown whether other exercise programmes or variations of the LEAP programme are as effective.

The high rate of global improvement after education and exercise compared with wait and see or corticosteroid provides a positive and empowering perspective for both patients and clinicians in a condition that is notorious for poor outcomes and quality of life, with few options of proved medical treatments.

BV is chair of sports physiotherapy, RM is senior research officer, AG is adjunct research fellow at the University of Queensland School of Health and Rehabilitation Sciences