Are corticosteroid injections more beneficial than anaesthetic injections alone in the management of rotator cuff-related shoulder pain? A systematic review

Tim Cook,1 Catherine Minns Lowe,2 Mark Maybury,3 Jeremy S Lewis2

ABSTRACT
Objective To compare the effectiveness of corticosteroid injections to local anaesthetic injections in the management of rotator cuff-related shoulder pain (RCRSP).

Design Systematic review with best evidence synthesis.

Data sources The Cochrane, PubMed, CINAHL Plus, PEDro and EMBASE electronic databases were searched (inception until 8 June 2017). Reference lists of included articles were also hand searched.

Eligibility criteria Two reviewers independently evaluated eligibility. Randomised controlled trials (RCTs) were included if they compared subacromial injections of corticosteroid with anaesthetic injections. Two reviewers independently extracted data regarding short-term, midterm and long-term outcomes for pain, self-reported function, range of motion and patient-perceived improvement.

Results Thirteen RCTs (n=1013) were included. Four trials (n=475) were judged as being at low risk of bias. Three studies of low risk of bias favoured the use of corticosteroid over anaesthetic-only injections in the short term (up to 8 weeks). There was strong evidence of no significant difference between injection types in midterm outcomes (12–26 weeks). There was limited evidence of no significant difference between injection types in long-term outcomes.

Conclusion Corticosteroid injections may have a short-term benefit (up to 8 weeks) over local anaesthetic injections alone in the management of RCRSP. Beyond 8 weeks, there was no evidence to suggest a benefit of corticosteroid over local anaesthetic injections.

Trial registration number PROSPERO CRD42016033161.

BACKGROUND
Shoulder pain is a common musculoskeletal disorder with prevalence estimates ranging from 6.9% to 26.0% for point prevalence, annual prevalence of 4.7%–46.7% and lifetime prevalence of 6.7%–66.7%.1 Prevalence increases with age,2 and shoulder pain is frequently associated with long-term disability.3–5 Injection therapy is a common intervention for musculoskeletal shoulder pain and is administered in primary and secondary care. In the UK, general practitioners administer corticosteroid (CS) injections to approximately 1 in 10 people presenting with shoulder pain in primary care.6 Injection therapy for shoulder pain is also performed by physiotherapists, orthopaedic surgeons, rheumatologists, radiologists, sports and exercise medicine doctors and others in primary and secondary care, as well as in private settings. However, the definitive number of people receiving CS injections for musculoskeletal shoulder conditions remains unknown.

Rotator cuff-related shoulder pain (RCRSP) is an overarching clinical term and includes a number of other conditions: subacromial impingement syndrome, subacromial pain syndrome and rotator cuff tendinopathy.8,9 In addition to local tissue pathology, persistent pain associated with RCRSP may be related to altered processing and output of the central nervous system.10–12 Education, advice and exercise are the most common treatments for RCRSP and have comparable results to surgery.13 Another very common treatment for this condition is injection therapy, which typically involves injections of CS in isolation, or more commonly, mixed with anaesthetic14 into the subacromial space.15 For patients with RCRSP, CS or CS and anaesthetic preparations are often administered for treatment,1 and anaesthetic injections alone are used for diagnosis, in a procedure known as the Neer impingement test.16

Although CS injections for RCRSP are common, the definitive mechanism of action is uncertain, with suggestions that they may have an anti-inflammatory role,17–19 reduce tenocyte numbers17 and inhibit nociceptor activity.18 There is also uncertainty regarding clinical effectiveness with previous reviews suggesting their benefit maybe unclear.20–22 short lived,21–23 no greater than non-steroidal anti-inflammatories21,22 or beneficial for up to 9 months.24 In addition, there is emerging evidence linking the use of CS injections with negative effects on rotator cuff tissue.25–27 Due to these risks, anaesthetic-only injections (although not devoid of risk) might, when deemed appropriate, be considered a reasonable alternative to CS in the management of RCRSP.6 A recently published meta-analysis assessed short-term outcomes and concluded that CS injections provide, at best, a minimal transient pain reduction in a small number of patients with rotator cuff tendinosis.23

No previous review has directly compared CS alone, or CS and anaesthetic injections, with local anaesthetic-alone injections in the treatment of RCRSP. A comparison of this nature is relevant for a number of reasons, including the common use of injection therapy in the management of RCRSP;
as well as: (1) the potential comparable clinical effectiveness of these medicines and (2) the potential deleterious effect of CS on tendon tissue.

To inform the shared decision-making process, those seeking and providing treatment for RCRSP would be better informed with more knowledge on injection therapy, especially comparing the most commonly performed procedures (CS alone or CS anaesthetic injections, with local anaesthetic-alone injections) in the management of RCRSP. Therefore, the aim of this review was to compare these pharmacological preparations in the management of RCRSP for clinical effectiveness (symptoms, range of movement and function) in the short term, medium term and long term.

METHODOLOGY
Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and Cochrane collaboration guidelines were followed. PROSPERO registration number: CRD42016033161.

Population
Inclusion criteria: studies with adult participants diagnosed with RCRSP were included. Exclusion criteria: participants with non-RCRSP shoulder conditions such as shoulder dislocation or instability, fractures, rheumatological conditions or frozen shoulder. Also, people who had undergone previous surgery, as well as those with confirmed full thickness rotator cuff tears.

Intervention/control
Inclusion criteria: randomised clinical trials. Studies were included if they compared groups receiving single or repeated: subacromial injections of CS with or without local anaesthetic versus local anaesthetic injection without CS. Concurrent prescription of exercise therapy, as well as prescription of pain relieving medications, such as analgesics and non-steroidal anti-inflammatory drugs (NSAIDs), was permitted inclusions, as this reflects common clinical management of RCRSP.

Exclusion criteria: in the treatment of RCRSP, the subacromial space is the most common target for injections, and investigations of injection therapy that did not solely target this region were excluded. Other injection procedures, such as barbotage, were also excluded.

Outcome
Outcome measures included shoulder pain, self-reported function, range of motion and patient-perceived improvement. Follow-up time postintervention was defined as short term (less than 3 months), midterm (3–12 months) and long term (a year or longer).

Data sources
The Cochrane Library, PubMed, EMBASE, PEDro and ‘CINAHL plus’ databases were searched from inception to 8 June 2017 by two independent reviewers (TC and MM). No language, date or publication restrictions were applied. Search terms included ‘shoulder’, ‘impingement’, ‘subacromial’, ‘injections’, ‘corticosteroid’ and ‘local anaesthetic’. These terms were linked broadly to the population, intervention, comparators and outcome elements for the review question (Table 1).

The reference lists of retrieved articles, including previous systematic reviews, were assessed for additional study titles and relevant publications, including articles not identified in the search, personal communications, books and book chapters.

Study selection
Studies that were not randomised controlled trials (RCTs) were excluded from the review. Selection of studies was independently performed by two reviewers (TC and MM). Where full-text manuscripts were not accessible, the corresponding authors were contacted. If there was no reply or the full text was not available, the study was excluded from this review. Following this process (and after a 1-month wait), two studies were excluded from the review as only abstracts of these studies have been published. Two eligible studies not published in the English language were professionally translated into English by bilingual members of the Cochrane collaboration.

Data extraction
Data were independently extracted by two reviewers (TC and MM) using the Cochrane data extraction form for RCT intervention reviews (http://training.cochrane.org/resource/data-collection-forms-intervention-reviews). Any discrepancies in this process were resolved by discussion between the two reviewers, followed by reassessment of the data. A system to resolve any disagreements was established a priori via discussion with a third reviewer (JL), but no such discrepancies occurred. Data
Results

The electronic database search, performed on 8 June 2017, identified 286 potentially eligible articles. Hand searches of relevant reference lists identified one further article, making a total of 287 potentially eligible articles. Ultimately, 13 full-text studies were included in this systematic review, and seven studies were excluded.35 36 43–47 Figure 2 details the PRISMA flow chart.

Short-term comparisons (0–12 weeks)

Twelve studies assessed short-term (0–12 weeks) outcomes of injection therapy for RCRSP. Five of the 12 studies, four of high risk of bias38 48–50 and one of low risk of bias,51 reported in favour of CS injections for a range of different outcome measures (table 3).

Three further studies, one of high risk of bias52 and two of low risk of bias,53 54 reported improvements in the first 4–6 weeks in favour of CS but reported no significant difference between groups at 12 weeks. The remaining four studies, three of high risk of bias17 55 56 and one of low risk of bias,54 reported no significant difference in short-term outcomes between the two types of injection therapy at any time point.

In summary, three trials53 54 55 (n=417) of low risk of bias favoured CS injections for the first 4–8 weeks post-injection, and one trial14 of low risk of bias (n=48) found no difference between the two types of injection.

Midterm comparisons (13–26 weeks)

In the midterm, two studies56 57 (both of high risk of bias) reported a significant difference in outcome favouring CS injection. One study57 (of high risk of bias) reported a significant difference in favour of local anaesthetic injection for pain relief. The remaining two studies,14 55 both of low risk of bias and including 217 participants, reported that there was no significant difference in midterm outcomes between the two types of injection therapy. Penning et al51 mixed anaesthetic (lidocaine 1%) with sodium chloride (0.9%), and the effect of sodium chloride may have been a confounding influence. Of note, Penning et al51 reported that this preparation (lidocaine and sodium chloride), designated as the placebo group in this trial, had the best results at 26 weeks with respect to reduction in pain and improvement in functional mobility.

Long-term comparisons (≥1 year)

This review identified only two studies with long-term outcome measures of at least 1 year. In summary, in the long term, there is evidence from only one study38 (high risk of bias) favouring CS injections, and one study54 (low risk of bias, n=179) suggesting no significant difference between injection groups.

Best evidence synthesis

Using the rating system described in our methods section42 and taking into account the results from all 13 studies (both of low and high risk of bias) to provide a best evidence synthesis, we summarise the following results:

► There is strong evidence (from eight trials, three of low risk of bias) to suggest a significant benefit of CS injections over anaesthetic-only injections for the first 4–8 weeks.

► There is strong evidence (from seven trials, three of low risk of bias) to suggest that at 12 weeks there is no significant difference in outcome between injection types.

► There is strong evidence (from two trials of low risk of bias) to suggest that there is no significant difference in outcome between injection types in the midterm (26 weeks).
### Table 2  Quality appraisal and assessment of risk of bias

<table>
<thead>
<tr>
<th>Study/source of bias</th>
<th>Was the method of randomisation adequate?</th>
<th>Was the treatment allocation concealed?</th>
<th>Was the patient blinded to the intervention?</th>
<th>Was the care provider blinded to the intervention?</th>
<th>Was the outcome assessor blinded to the intervention?</th>
<th>Was the dropout rate described and acceptable?</th>
<th>Were all randomised participants analysed in the group to which they were allocated?</th>
<th>Were the groups similar at baseline regarding the most important prognostic indicators?</th>
<th>Were cointerventions avoided or similar?</th>
<th>Were the interventions acceptable in all groups?</th>
<th>Was the timing of the outcome assessment similar in all groups?</th>
<th>Other sources: validated outcome measure?</th>
<th>Other sources: conflict of interest declared?</th>
<th>Overall risk of bias rating</th>
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<tbody>
<tr>
<td>Petri et al.²⁹</td>
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<td>Adebajo et al.²⁸</td>
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<td>Blair et al.³¹</td>
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In relation to conflict of interest, an answer of ‘yes’ would indicate a potential high risk of bias and the opposite for an answer of ‘no’.

+=Yes; −=No; ?=Unclear.

VAS, visual analogue scale (for pain).
In summary, CS injections may have better short-term results than anaesthetic-only injections in the first 8 weeks. There does not appear to be any convincing evidence from the studies of low or high risk of bias that CS injections confer additional benefit over anaesthetic-only injections after this time point.

**DISCUSSION**

The studies evaluated as being at low risk of bias in this review have indicated that there may be a temporary initial benefit (4–8 weeks) of administering CS in comparison with anaesthetic injections for the treatment of RCRSP. There does not appear to be any evidence that CS injections confer any additional benefit after this time point. We are unable therefore to establish whether CS medications only afford a therapeutic advantage for 4–8 weeks and no added benefit thereafter, or whether they provide an initial benefit after which time both medications are of equal value.

The certainty of any conclusions reached is challenged by the choice, appropriateness and lack of consistency of outcome measures used for the patient populations within the individual studies. Due to variation in study design and inconsistent use of primary outcome measures, we did not pool data.

Although our study differs in its primary objectives and methodology, our findings are similar to those reported in a recent review. The authors of this recent review did not identify any additional evidence that was not included in our review that may have influenced our findings. The continued use of CS is suggested by the authors to be attributable to 'habit, to the underappreciation of the placebo effect, to satisfy patient desire for a physical intervention, or for simple remuneration'.

The majority of the included studies did not perform injection therapy in isolation. Although use of concurrent therapy (exercise, analgesics and NSAIDs) was varied, it was balanced within each individual trial. There is no definitive way of determining the impact of concurrent therapy in addition to the administered injections on the reported outcomes. Because of this uncertainty, the influence of an independent injection or an injection in conjunction with other therapy requires further investigation.

The majority of the investigations included in this review described the administration of local anaesthetic injections as a placebo procedure, assuming that local anaesthetic injections in the subacromial space are inert and do not provide any therapeutic benefit. However, recent evidence suggests that local anaesthetics such as lidocaine and bupivacaine may have an effect of reducing tenocyte numbers and altering collagen organisation in tendons. Increased cellularity has been associated with tendinopathy and, if elevated, reducing tenocyte numbers may be a possible mechanism by which injection therapy may contribute to the restoration of tendon homeostasis. The manner by which injections may improve symptoms remains elusive, and in addition to reducing inflammation, restoring tissue homeostasis, reducing the threat of pain and placebo, it has also been suggested that the therapeutic effect of subacromial injections may be the effect of distension of the subacromial space. Due to these possible chemical, biological and physical effects, the assumption that local anaesthetic injections are a true placebo is challenged and suggests their use may provide a therapeutic effect. However, this needs to be balanced by a potential deleterious effect. Further research is required to determine the benefits of the medicines used in these studies compared with other medicines, other interventions, natural history and a validated placebo. The physiological effects of these interventions on the local tissues needs also to be further investigated.

**Implications for practice**

There is a paucity of data quantifying the number of CS injections performed annually in the UK. Limited evidence from one outpatient survey (n=2000) suggested the shoulder was the most common anatomical site of musculoskeletal injection, accounting for over a third of all injections. Seventy-two per cent of injections for the shoulder were for the stated treatment of subacromial bursitis (RCRSP). Recent United Kingdom National Health Service figures reveal that almost 800 000 prescriptions of injectable CSs are dispensed nationally within primary care per year. The average cost of each prescription of CS is estimated at £5.16, totalling a yearly national cost of over £4 000 000. The average cost of a standard dose of local anaesthetic (5 mL of 1% lidocaine) is £0.24 p. We believe it is safe to assume that, while exact figures for patients with RCRSP are unknown, the cost of CS injections for this patient group is sizeable and, if local anaesthetics prove safe and effective in future research, significant cost savings could be achieved. Lidocaine-only injections

Figure 1  Risk of bias graph (frequency (%) of scores per item).
Table 3  Characteristics of low risk of bias studies included in the review (n=4)

<table>
<thead>
<tr>
<th>Study reference</th>
<th>Number of participants (male/female) (Mean age- years) (Mean duration of symptoms)</th>
<th>Interventions</th>
<th>Outcome measures</th>
<th>Findings</th>
</tr>
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<tbody>
<tr>
<td>Alvarez et al</td>
<td>58 (31 M/27 F) (48.0 years) Group 1: 46.0 (Group 2: 50.0 3 years)</td>
<td>Group 1: blind SA injection 5 mL 2% xylocaine Group 2: blind SA injection 4 mL 2% xylocaine+1 mL (6mg) betamethasone</td>
<td>Western Ontario Rotator Cuff Index (0–100, 0=best score, 100=worst score). No statistically significant difference between groups at 3 and 6 months. Mean WORC at 12 weeks: Group 1: 45.4, group 2: 56.3 (P&lt;0.13) Mean WORC at 6 months: Group 1: 51, group 2: 59 (P&lt;0.38)</td>
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<tr>
<td>Watson et al</td>
<td>179 (83 M/96 F) (59.0 years) Individual group figures not reported (7 weeks)</td>
<td>Group 1, 3 and 5: blind SA injection 1 mL 1% lidocaine Group 2, 4 and 6: blind SA injection 1 mL (40 mg) triamcinolone</td>
<td>British shoulder disability questionnaire (0–23, 0=no disability, 23=severe disability). Short-form 36 item (SF-36) (higher score=better outcome). Statistically significant improvement at 4 weeks in groups 2, 4 and 6 for BSDQ (P=0.026). Specific data were supplied by the author on written request. There was no statistically significant difference between groups 3 and 6–12 months. Over course of trial (4 weeks, 12 weeks and 1 year) mean: BSDQ: groups 1, 3 and 5: 11.7, 8.1 and 6.4; group 2, 4 and 6: 10.3, 8.7 and 7.3 (SE=0.48) SF-36 MCS: groups 1, 3 and 5: 46.4, 47.7 and 47.2; groups 2, 4 and 6: 45.8, 45.9 and 47.7 (SE=0.78) SF-36 PCS: groups 1, 3 and 5: 39.6, 41.4 and 42.9; group 2, 4 and 6: 41.4, 41.0 and 42.5 (SE=0.63)</td>
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<td>Hong et al</td>
<td>79 (32 M/47 F) (50.1 years) Group 1: 50.8 (Group 2: 48.6 Group 3: 51 11 months)</td>
<td>Group 1: US-guided SAB injection 4 mL (40 mg) triamcinolone Group 2: US-guided SAB injection 2 mL (20 mg) triamcinolone+2 mL 1% lidocaine Group 3: US-guided SAB injection 4 mL 1% lidocaine</td>
<td>Shoulder disability questionnaire (0–22, 0=no disability, 22=maximal disability) Pain VAS (0–10, 0=no pain, 10=severe pain) BSDQ: groups 1, 3 and 5: 11.7, 8.1, 11.0; group 2, 4 and 6: 10.3, 8.7, 6.4 (P&lt;0.01). Constant: group 1: 0.1, 2.6, 10.4; group 2: 0.8, 1.6, 3.2; 4.6; group 3: 1.4, 2.9, 5.1, 7.2 Functional mobility test (4–28, 4=normal function, 28=poor function) SPS (7–28, 7=maximal disability)</td>
<td>Groups 1 and 2 had a statistically significant improvement in both outcomes at 8 weeks, compared with group 3: Mean improvement in outcomes from baseline at 8 weeks (higher number=better improvement): BSDQ: group 1: 5.7; group 2: 5.6; group 3: 0.9 (P&lt;0.001). VAS: group 1: 3.5; group 2: 2.8; group 3: 0.6 (P&lt;0.001). BSDQ: group 1: 0.3, group 2: 0.7, group 3: 0.1 (P&lt;0.001). Pain VAS: group 1: 0.3, group 2: 0.7, group 3: 0.1 (P&lt;0.001). Functional mobility test (4–28, 4=normal function, 28=poor function) SPS (7–28, 7=maximal disability)</td>
</tr>
<tr>
<td>Penning et al</td>
<td>159 (75 M/84 F) (53 years) Group 1: 53 (Group 2: 52 Group 3: 54 6 months)</td>
<td>Group 1: blind SA injection 8 mL 1% lidocaine+2 mL hyaluronic acid Group 2: blind SA injection 8 mL 1% lidocaine+2 mL (20 mg) triamcinolone Group 3: blind SA injection 8 mL 1% lidocaine+2 mL sodium chloride 0.9%. All injections repeated at 1, 3 and 6 weeks as needed.</td>
<td>Shoulder disability questionnaire (0–100, 0=no disability, 100=maximal disability) Pain VAS (0–10) Constant score (0–100, 0=poor function, 100=full function) Functional mobility test (4–28, 4=normal function, 28=poor function) PP (30–78, 30=maximal disability) Patient specific functional score (4–28, 4=normal function, 28=poor function) Subjective pain score (0–10, 0=no disability, 10=severe disability)</td>
<td>Group 2 had a statistically significant improvement in all outcomes compared with group 1 at 3 (P&lt;0.004), 6 (P&lt;0.001) and 12 (P&lt;0.001) weeks and compared with group 3 at 6 weeks (P&lt;0.006). There was no significant difference in outcome between groups 2 and 3 at 3 and 12 weeks. There was no statistically significant difference between all three groups in 26 weeks. Mean improvement in outcomes from baseline at 3, 6, 12 and 26 weeks (higher number=better improvement): BSDQ: group 1: 1.1, group 2: 0.8, group 3: 0.9 (P&lt;0.001). VAS: group 1: 0.5, group 2: 0.7, group 3: 0.1 (P&lt;0.001). Group 2: 0.3, 0.7, 0.1, 0.8; group 2: 1.6, 2.6, 2.7, 2.1; group 3: 0.8, 1.6, 2.3, 2.4 Constant: group 1: 0.1, 2.6, 3.4, 4.9; group 2: 3.6, 7.6, 4.6; group 3: 2.5, 4.7, 5.1, 9.2 Functional mobility test (4–28, 4=normal function, 28=poor function) Subjective pain score (0–10, 0=no disability, 10=severe disability) Subjective pain score (0–10, 0=no disability, 10=severe disability)</td>
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BSDQ, British Shoulder Disability Questionnaire; Blind, landmark guided; E, female; FMT, functional mobility test; M, Male; PSD, patient specific disability score; SA, subacromial; SAB, subacromial bursal; SDQ, Shoulder Disability Questionnaire; SF-36 MCS, short-form 36-item mental component score; SF-36 PCS, short-form 36-item physical component score; SPS, shoulder pain score; US, ultrasound; VAS, visual analogue scale; WORC, Western Ontario Rotator Cuff Index.

would be over 20 times less expensive than the average cost of CS medication.

Clinically, in addition to cost, is the growing concern regarding the negative effects of CS on tendon tissue.26 27 65 It has also been suggested that the use of CS injections may detrimentally impact the course of lateral epicondyalgia.66 This review has highlighted a lack of evidence to support the use of CS injections over local anaesthetic injections for the treatment of RCRSP after an 8-week period, which raises important issues for clinicians. Should clinicians avoid injections entirely? Should clinicians consider local anaesthetic injections for patients with RCRSP as the first choice of management, and only provide CS injections to those who do not respond to local anaesthetic? Additionally, potentially, the risks of both CS and anaesthetic-only injection outweigh the benefits, as both pharmaceutical products may damage tendon tissue. Future research is needed that compares injections of CS, local anaesthetic, saline injections, needle only (for the mechanical effect), other products (eg, hyaluronate sodium) an advice-only group, true placebo and a control group (to map natural history). In addition, uncertainty persists over the benefit of image-guided versus landmark-guided injection therapy for the treatment of RCRSP,67 and whether the procedure should be performed locally or systemically.33

In an investigation of local (CS to the subacromial bursa and local anaesthetic to the gluteal region) versus systemic (CS to the gluteal region and local anaesthetic to the subacromial bursa) for RCRSP, Ekberg et al33 concluded that as both groups improved, both local and systemic injections of CS were equally effective. Although this may support a systemic effect of CS, these findings may be confounded for a number of reasons. This review suggests that CS injections may confer clinical benefit in the first 8 weeks, but beyond this time point both types of injections and anaesthetic injections appear to be equally effective. Therefore, the conclusion that local and systemic CS injections are equally effective33 needs to be considered cautiously as the benefit reported in this study may have been due to the administration of CS and local anaesthetic injections to the subacromial bursa. In addition, as there was no control group, the reported findings33 may have mapped natural improvement or possibly an equivalent placebo response in both groups.

The findings of this review suggest that, in the treatment of RCRSP, CS injections may have a more beneficial effect than
anaesthetic injections alone in the short term (up to 8 weeks). However, the size of this effect is uncertain and beyond this time point, the two medicines appear to have a comparable effect. The combination of anaesthetics and sodium chloride may be associated with better outcome at 26 weeks. Anaesthetic alone may also have a positive effect in the short term. The uncertainty implies that it is not yet possible to guide clinicians on particular circumstances where (1) there is a definitive role for injection therapy for RCRSP and (2) when CS or anaesthetics may be equally responsive or one may be more beneficial than the other. Equally important is that both medicines may have a detrimental effect on rotator cuff tissue. Shared decision making empowers people seeking healthcare to voice their opinions and thoughts. The findings of this review may be used to help inform people of the risks and benefits of their choices.

LIMITATIONS
There is debate regarding how to assess risk of bias and methodological quality in clinical trials. The variety of tools available, covering differing items/domains, suggest a lack of agreement regarding their relevance. The Cochrane risk of bias tool was used in this review. Although widely used, this tool does have some acknowledged challenges; these include modest inter-rater agreement and how to deal with the risk of bias associated with funding/conflicts of interest. In these review may be used to help inform people of the risks and benefits of their choices.8

The uncertainty implies that it is not yet possible to guide clinicians on particular circumstances where (1) there is a definitive role for injection therapy for RCRSP and (2) when CS or anaesthetics may be equally responsive or one may be more beneficial than the other. Equally important is that both medicines may have a detrimental effect on rotator cuff tissue. Shared decision making empowers people seeking healthcare to voice their opinions and thoughts. The findings of this review may be used to help inform people of the risks and benefits of their choices.

What are the findings?

- Corticosteroid injections may confer superior benefit compared with anaesthetic-only injections in the short term (up to 8 weeks).
- Beyond 8 weeks, corticosteroid and anaesthetic-only injections had the same therapeutic effect for rotator cuff-related shoulder pain.
- It is unknown if improvement over time is due to placebo, natural history or a therapeutic effect of the medicines used in the published research.

How might it impact on clinical practice in the future?

- Both corticosteroid and anaesthetic-only injections may have short-term benefit for people considering injection therapy for rotator cuff-related shoulder pain.
- Corticosteroid injections may have a superior short-term therapeutic effect compared with anaesthetic-only injections, but not beyond that time point.
- The medium-term and long-term effects of corticosteroid and anaesthetic injections are equivocal.

REFERENCES


Are corticosteroid injections more beneficial than anaesthetic injections alone in the management of rotator cuff-related shoulder pain? A systematic review

Tim Cook, Catherine Minns Lowe, Mark Maybury and Jeremy S Lewis

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