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# Keele Critically Appraised Topic (CAT Form)



## Clinical Question

In adults with subacromial pain, do corticosteroid injections (CSI) provide long term benefits to pain, function or cost effectiveness, at 12 months and beyond, versus usual care?

## Clinical bottom line

The best available evidence is from a good quality multicentre, pragmatic, 2X2, Randomised Controlled Trial (RCT) using patients from 20 NHS trusts in the UK, GRASP trial (Hopewell et al 2021). They concluded that sub-acromial corticosteroid injections (CSI) provided no long-term benefit for patients with rotator cuff disorders.

They found a small difference in the Shoulder Pain and Disability Index (SPADI) score in favour of CSI at 8 weeks when compared to no injection.

Clinicians can help patients with shared decisions making by sharing this good quality study finding that CSI may provide some patients with a good response for up to 8 weeks, but they are no better at 6-12 months compared to those they have not had the injection.

## Why is this important?

Shoulder pain is a common musculoskeletal (MSK) condition with 1% of adults over 45 years and older presenting in primary care services with a new episode of shoulder pain each year (Mitchell et al 2005). It accounts for 2-4% of general practitioners (GPs) consultations in the UK (Linsell et al 2006). Rotator cuff disorder such as sub-acromial pain account for 70% of cases (Mitchell et al 2005). Clinicians want to make sure they are using the best available evidence to help guide patients in joint decision making around this common MSK condition. There is growing evidence that injections can cause harm and only provide short-term relief. Patients need to be aware of this when deciding what treatment may be of benefit to them.

## Search timeframe (e.g. 2013-2013)

Up to January 2022

## Search criteria

|  |  |  |
| --- | --- | --- |
| **Population Intervention Comparison Outcomes (PICO) themes** | **Description** | **Search terms** |
| Population and Setting  E.g. adults with OA, primary care | In adults with subacromial pain | Adults  subacromial pain, impingement, shoulder pain, shoulder bursitis, subacromial bursitis, subdeltoid bursitis, rotator cuff related pain, rotator cuff tendin\*, rotator cuff tear, shoulder tendin\* |
| Intervention or Exposure  (i.e. what is being tested)  e.g. manual therapy | Steroid injections | Clinically or ultra sound guided or land marked guided injection to the subacromial space.  Triamcinolone or Adcortyl Or Kenalog or  Depo medrone or Hydrocortisone or  Corticosteroid |
| Comparison, if any  e.g. usual care, leaflet | Usual care | Advice and or Exercise, Tendon loading Exercises, Stretches |
| Outcomes of interest  e.g. Visual analogue scale, Range of motion | Pain, function, cost effectiveness | Pain  Function  Return/ Reoccurrence/  Recurrence of symptoms/ pain  Cost effectiveness |
| Types of studies  e.g. Randomised Controlled Trails, Systematic reviews |  | Randomised controlled trials, Systematic reviews |

## Databases searched

NIHR, Web of Science, PEDro, HDAS, Pubmed, Amed, Cinahl, Cochrane library

## Date of search

Up to January 2022

## Results of the search: include the number in each box

## Table 1- Detail of included studies

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **First author, year and type of study** | **Population and setting** | **Intervention or exposure tested** | **Study results** | **Assessment of quality and comments** |
| **Hopewell et al (2021) Multicentre, pragmatic, 2X2 factorial, RCT** | Adults 18 years and over with rotator cuff disorder (cuff tendonitis, impingement syndrome, tendinopathy or rotator cuff tear), that had started in the last 6 months.  Recruited from 20 NHS trusts | Participants were randomly assigned to one of four groups:  1) n = 174 Progressive exercise program that was supervised by a physiotherapist which was face-to-face, up to 6 session over 16 weeks.  2) n = 174 Best practice advice: 1 face-to-face session (up to an hour) with physiotherapists and home exercise programme supported by high quality material.  3) n = 182 Cortico steroid injection(CSI) plus progressive exercise programme - as group 1.  4) n = 178 CSI plus best practice advise session –as group 2 | Overall, substantial improvements in SPADI scores in each group over 12 months.  No statically significant difference in SPADI scores between progressive exercise and injection at 8 weeks, 6 months, 12 months or over 12 months. (CI 95%)  No evidence of a difference in SPADI score between progressive exercise and best practice advice at 8 weeks, 6 months or 12 months.  No evidence of a difference in SPADI between injection and no injection at 6 months and 12 months and over 12 months. However, there was a small difference in SPADI score at 8 weeks in favour of the injection.  No adverse events reported.  Best practice advise plus injection is expected to be the best value for money in the UK at a ceiling ration of £20,000 per QALY | Good quality RCT  Study addressed a clearly focused question.  Randomisation by independent research facilitator using a centralised computer randomisation service and stratified by site, age and sex.  No masking of participants or physiotherapists once treatment allocation was revealed. Questionnaires were anonymised.  Clear inclusion and exclusion criteria  Injectors were predominately Extended Scope Physiotherapists with appropriate post registration qualification. Common drugs used as in primary care.  Physiotherapists received training from a GRASP trial physiotherapists and a vigorous quality control programme was carried out to ensure intervention fidelity.  All analyses were on an intention-to-treat basis.  Primary outcome was measured using the SPADI tool.  Secondary outcomes: Eq-5D-5L, fear avoidance belief QA, a number of others and measurements were collected at baseline and then by postal QA at 8 weeks, 6 months, 12 months after randomization. Telephone F/U were used to those who did not respond.  Not able to blind participants. When practical, team members were masked until data analysis was completed.  Target sample 704, based on 90% power calculations to detect minimally clinically important difference of 8 points on the SPADI total scale.  Statically significance was set at 1% and corresponding 99% CIs for primary outcome analyses. For all other outcomes, 5% and 95% CI were reported.  Relevant to clinical practice. Population sample was predominately white (>90%) so may vary depending on where you work.  Currently treat pts with physio and CSI – Will be better at providing good quality evidence to help make informed decisions for this condition. |
| **Rhon et al 2014, pragmatic RCT** | Consecutive patients aged 18-65 referred to physiotherapy by GP or Orthopaedic doctor. Based at a US military medical centre, mix of active and retired service personal, and family members (not general population) | Randomly assigned to either   1. N= 52 Physiotherapy: Manual therapy and home exercises 2. N= 52   Steroid injection with 40mg Triamcinilone to the subacromial space (up to 3 in a 12/12 period) | No statistically significant difference in Shoulder Pain and Disability Index (SPADI), Global rating of Change (GRC) score or Numerical Pain rating scale (NPRS) at 1,3 6 or 12 moths, between groups. Both groups made improvements in SPADI and NPRS.  Reduced health care consumption in Physiotherapy group  Only mild adverse reactions reported for injection: Transient pain in 10.7% and skin pigmentation in 4%, no serious or lasting harm. | Pragmatic RCT, providing real worldview (some patients may have received care outside of the study protocols, some patients declined injection therapy), however limited generalisability due to study population being military.  No blinding of patients/ clinicians, however assessors were blinded.  Recognised outcome measures used and robust randomisation adhered to, with intention to treat analysis used.  Accepting the study limitations, no difference between groups would indicate no additional benefit form steroid injection vs physiotherapy, but the outcomes were at least as good with only minor adverse events. However the health care utility of the injection group adds extra cost (not formally cost effectiveness analysis)  As a criticism there was no provision of physiotherapy to the injection group routinely, which may not represent standard care. Participants were discouraged from seeking additional care, but 10/52 were provided physiotherapy at their request.  Conclusion: relatively small sample size, but powered results and minimal loss to follow up (4%), non-generalisable results, but within study context, no long-term benefits of CSI are noted. |

# Summary

Two randomised controlled trials demonstrate no long-term benefits of CSI vs usual care, in the form of best practice advice or physiotherapy. The GRASP trail (Hopewell et al 2021) found a small difference in the Shoulder Pain and Disability Index (SPADI) score in favour of CSI at 8 weeks when compared to no injection. Hopewell et al (2021) concluded that sub-acromial CSI provided no long-term benefit with rotator cuff disorders. However, the combination of best practice advice and a CSI was deemed the most cost effective treatment combination for use of NHS resources (when Quality Adjusted Life Years QALYs are considered), although this conclusion is uncertain. Interestingly progressive exercise alone was the second most cost effective intervention, with the addition of injection to progressive exercise reducing the QALYs gained and cost effectiveness. The cost associated with each intervention are not presented but physiotherapy training to deliver study progressive protocol are included, which may not translate outside of the research project, equally it is not clear it clinician training to provide injection therapy has been costed. Caution should be applied to interpretation of this conclusion.

# Implications for practice

Clinicians can help patients with shared decisions making by sharing this good quality study finding that CSI may provide some patients with a good response for up to 8 weeks, but they are no better at 6-12 months compared to those they have not had the injection.



# What would you post on X (previously Twitter)?

No long term benefits from steroid injections in subacromial pain, but combination treatment of injection and best practice advice may be most cost effective.

# References

Hopewell S, Keene DJ, Marian IR, Dritsaki M, Heine P, Cureton L, Dutton S J, Dakin H, Carr A, Hamilton W, Hansen Z, Jaggi A, Littlewood C, Barker K L, Gray A, Lamb SE (2021). Progressive exercise compared with best practice advice, with or without corticosteroid injection, for the treatment of patients with rotator cuff disorders (GRASP): a multicentre, pragmatic, 2 × 2 factorial, randomised controlled trial. The Lancet Vol 398, 416-428

Linsell L, Dawson J, Zondervan K, et al. Prevalence and incidence Linsell L, Dawson J, Zondervan K, et al (2006). Prevalence and incidence of adults consulting for shoulder conditions in UK primary care; patterns of diagnosis and referral. *Rheumatology*; **45:** 215–21

Mitchell C, Adebajo A, Hay E, Carr A (2005). Shoulder pain: diagnosis and management

in primary care. *BMJ*; **331:** 1124–28.

Rhon, D.I., Boyles, R.B. and Cleland, J.A., 2014. One-year outcome of subacromial corticosteroid injection compared with manual physical therapy for the management of the unilateral shoulder impingement syndrome: a pragmatic randomized trial. *Annals of internal medicine*, *161*(3), pp.161-169.

Please tick the box that best reflects your clinical bottom line and include the picture on page 1

| **CAT image** | **Evidence quality** | **Checkbox** |
| --- | --- | --- |
| This is a green cat with a happy face | Good quality evidence to support use…. |  |
| This is an orange cat with an indifferent face | Insufficient or poor quality evidence OR substantial harms suggest intervention used with caution after discussion with patient… |  |
| This is a red cat with an unhappy face | No good quality evidence, do not use until further research is conducted OR  Good quality evidence to indicate that harms outweigh the benefits…. |  |

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