

Meeting Date	21 June 2017
Topic	Effectiveness of steroid injections for hand pain

Purpose

This purchasing guidance (considered judgement) document accompanies a systematic review commissioned from the International Centre for Allied Health Evidence (iCAHE), University of South Australia. The purposes are to:

- Review the effectiveness and safety of steroid injections in the management of persistent pain conditions affecting the hand.
- Make purchasing recommendations on this interventional pain management (IPM) modality for hand pain.

Background

Pain in the hand region can arise from a range of structures and pathologies. Risk factors include osteoarthritic changes, overuse and repetitive movements. The pain conditions for which steroid injections are most commonly used as an interventional pain management technique are listed below. The systematic review focuses on these five conditions.

1. Pathologies affecting the first carpometacarpal joint, e.g. thumb base osteoarthritis
2. de Quervain’s disease (stenosing tenosynovitis affecting the base of the thumb)
3. Trigger finger (digital flexor tenosynovitis)
4. Dupuytren’s disease
5. Ganglion cysts

Treatment options for these conditions include physiotherapy, splinting, injections and surgery. Broadly speaking, steroid injections are used because steroids inhibit the inflammatory response. A range of different steroid preparations are used, with or without local anaesthetic.

ACC's 2005 guidance on IPM procedures did not cover steroid injections to the hand.

1. Effectiveness, Volume of Evidence, Applicability / Generalisability and Consistency / Clinical impact

Comment here on the extent to which the service/product/ procedure achieves the desired outcomes. Specific reference needs to be made to safety. Report number needed to treat and harm where possible, any issues concerning the quantity of evidence and its methodological quality and the extent to which the evidence is directly applicable or generalisable to the New Zealand population, and the degree of consistency demonstrated by the available evidence. Where there are conflicting results, indicate how the group formed a judgement as to the overall direction of the evidence. Comment on the clinical impact e.g. size of population, magnitude of effect, relative benefit over other management options, resource implications, balance of risk and benefit.

Volume & quality of studies:

The iCAHE authors identified 16 systematic reviews (SRs) and 19 additional randomised controlled trials (RCTs) on steroid injections for hand pain. They also looked at 13 cohort and case series studies for information on safety.

The quality of included SRs was variable, ranging from high (n=5) to acceptable (n=3) to low (n=6). Quality issues included: failure to address or report on publication bias, conflicts of interest or excluded studies; lack of differentiation between primary and secondary outcomes when synthesising findings; and failure to examine possible relationships between outcomes and clinical indications or treatment parameters (e.g. dosage).

The RCTs were also of variable quality (6 high, 5 acceptable and 8 low quality). Quality issues included: lack of blinding; failure to employ intention-to-treat analysis or ensure that groups differed only with respect to treatment allocation; and failure to control for co-interventions (e.g. exercise).

Key findings, from the higher quality studies where available, are outlined below.

Evidence of effectiveness (pain relief and/or improved function):

1. Pathologies affecting the first carpometacarpal joint, e.g. thumb base osteoarthritis

SR findings were conflicting. A low quality SR (Spaans et al. 2015) on thumb base osteoarthritis identified short term pain relief benefits associated with steroid injections, whilst an acceptable quality SR (Trellu et al. 2015) found that steroid injections were no more effective than placebo at 12 or 24 weeks. Spaans et al. found that hyaluronate injections were more effective than steroid injections for longer term pain relief, whilst Trellu et al. concluded the opposite.

An acceptable quality RCT (Makarawung et al. 2013) that randomised patients with trapeziometacarpal arthrosis or de Quervain's disease to either steroid or placebo injection had interesting findings regarding psychological factors. It found that catastrophic thinking was a better predictor of disability and pain intensity than injection type one to three months post-treatment.

2. de Quervain's disease (stenosing tenosynovitis affecting the base of the thumb)

The evidence base for this condition was more conclusive. Two high quality SRs, the SR/meta-analysis by Ashraf & Devadoss (2014) and the Cochrane review by Peters-Veluthamaningal et al. (2009a), found that steroid injections were more effective than splinting. However, the clinical applicability of the earlier SR was limited by the small quantity of evidence available at the time. A high quality SR by Cavaleri et al. (2015) found that both steroid injections and hand therapy (splinting) improved pain and function from baseline, but that effectiveness was significantly improved when both treatments were combined.

A high quality RCT by Peters-Veluthamaningal et al. (2009c) found that one or two steroid injections led to short term improvement compared to placebo and that this was maintained, albeit at non-significant levels, at 12 month follow up. However, note the findings of the RCT by Makarawung et al. (see above) on the role played by pain catastrophizing.

3. Trigger finger (digital flexor tenosynovitis)

A Cochrane SR by Peters-Veluthamaningal et al. (2009b) found moderate quality evidence that injections of steroid plus lidocaine were (i) more effective than placebo and (ii) more effective than lidocaine alone at four weeks. One included study suggested the effects of steroid injections can last up to four months.

Of the five pain conditions, trigger finger represented the largest number of RCTs included in the iCAHE review. RCT findings suggested that steroid injections were:

- More effective than placebo (Peters-Veluthamaningal et al. 2008, high quality)
- As effective as extracorporeal shock wave therapy in reducing pain (Yildirim et al. 2016, high quality)
- More effective for pain and function when used in combination with hyaluronate injection (Liu et al. 2015, high quality)

- Less effective than percutaneous A1 pulley release (a minimally invasive technique for easing tendon movement) for pain and recurrence (Sato et al. 2012, high quality; Zyluk & Jagielski 2011, acceptable quality).
- Less effective than open surgery in reducing pain (Sato et al. 2012, high quality)

4. Dupuytren's disease

A well conducted SR found that the evidence for steroid injections in the management of Dupuytren's disease is of relatively low quality (Ball et al. 2016). *Note: the cause of this condition is unknown and it is not believed to be related to injury or occupation. ACC is therefore very unlikely to accept claims.*

5. Ganglion cysts

A low quality SR found that steroid injections given at the time of aspiration have limited benefit (Meena & Gupta 2014). *Note: the cause of this condition is unknown and ACC may be unlikely to accept claims.*

Evidence on safety:

Steroid injections to the hand appear to be a relatively safe intervention. Minor complications are not uncommon, but rarely require significant medical attention. No serious adverse events were reported in any of the included studies for any of the five pain conditions. Trigger finger represented the highest number of reported adverse events (e.g. pain at injection site, steroid rash, heat flushes), but this most likely reflected the relatively high proportion of RCTs on this condition rather than any increased risk.

Evidence on the value of imaging (ultrasound guidance):

The evidence is unclear. One low quality RCT (Cecen et al. 2015) found that ultrasound guided steroid injections were no more effective than blind injections for participants with trigger finger. However, one acceptable quality RCT (Kume et al. 2012) found that ultrasound guided injections were more effective than blind injections at targeting the extensor pollicis brevis in participants with de Quervain's disease.

2. Cost

Where possible and reported in the published research literature any economic analysis of the new treatment is considered. Where possible the following will be considered; total costs of the new intervention and number of claimants likely to be affected are considered, along with comparison with the cost of current treatments or interventions, actuarial assessment of the impact of the intervention on scheme liability (including direct and indirect impact e.g. other services and access), expected "accrued benefit" in terms of quality of life, longer life or speedier return to the workforce, implications of cost to the wider health sector.

The iCAHE review found no evidence on the economic implications of using steroid injections to treat hand pain.

According to the IPM service schedule (ACC 2015), the unit price for this intervention is \$53.80 excluding GST (\$430.47 if delivered under imaging). It is classed under *Joint injections* and coded IN30 (IN31 if imaging is used). Up to five IN30 treatments may be given without prior ACC approval. Prior approval is required for IN31 procedures.

For the last five years (2012 – 2016) for which we have complete data, ACC has funded fairly small numbers of IN30 claims – an average of 11 per year with annual costs around \$670. For IN31 claims, ACC has typically funded only one or two claims per year with annual costs of around \$540.

3. Equity

The extent to which the intervention reduces disparities in health status - in particular equity of access and health outcome. The extent to which the intervention supports the objectives of the Maori access strategy and will encourage access to assessment, treatment and rehabilitation services for those groups where there is evidence of that access is problematic.

There do not appear to be any equity issues associated with this intervention.

4. Consistency with the intent of the AC Act

Purchasing decisions made by ACC must be consistent with and reflect consideration of factors described in the AC Act [Schedule 1, clause 2 (1 and 2)] and these decisions must be defensible against this statutory requirement in respect of individual claimants.

There do not appear to be any consistency issues associated with this intervention.

5. Possible purchasing options

The options are:

6. Purchase,
7. Do not purchase, or
8. Purchase on a case by case basis on the decision of the Manager Corporate Clinical Advice (or equivalent).

6. Evidence statements

Summarise the advisory group's synthesis of evidence relating to this service, product or procedure, taking the above factors into account, and indicate the evidence level that applies.

Effectiveness of steroid injections in the management of persistent hand pain:

1. Pathologies affecting the first carpometacarpal joint

- The evidence suggests that steroid injections for thumb-base osteoarthritis should not be the first line of treatment as the evidence is unclear (**level B** based on conflicting findings from a moderate quality evidence base [two SRs and one RCT]).
- The evidence suggests that the effectiveness of steroid injection compared to hyaluronate injection for relief of pain in thumb-base osteoarthritis is unclear (**level B** based on conflicting findings from a moderate quality evidence base [two SRs]).

2. de Quervain's disease (stenosing tenosynovitis affecting base of thumb)

- The evidence suggests that steroid injections are effective in reducing pain and improving function in patients with de Quervain's disease (**level A** based on moderate to high quality evidence from two SRs and one RCT).

- The evidence suggests that steroid injections are more effective in reducing pain and improving function in patients with de Quervain's disease when combined with hand therapy (splinting) (**level B** based on high quality evidence from one SR).

3. **Trigger finger (digital flexor tenosynovitis)**

- The evidence suggests that steroid injections are effective in reducing pain and improving function in patients with trigger finger compared to placebo (**level B** based on moderate quality evidence from one SR and one RCT).
- The evidence suggests that steroid injection with lidocaine is more effective than injection of lidocaine alone in reducing pain (**level B** based on moderate quality evidence from one SR).
- The evidence suggests that steroid injections are as effective as extracorporeal shock wave therapy alone in reducing pain (**level B** based on high quality evidence from one RCT).
- The evidence indicates that the effectiveness of steroid injections is improved when used in combination with hyaluronate injection (**level B** based on high quality evidence from one RCT).
- The evidence indicates that steroid injections are less effective than percutaneous A1 pulley release for pain and recurrence in patients with trigger finger (**level B** based on moderate to high quality evidence from two RCTs).
- The evidence indicates that steroid injections are not as effective as open surgery for reducing pain in patients with trigger finger (**level B** based on high quality evidence from one RCT)

4. **Dupuytren's disease** (Note: the cause of this condition is unknown and it is not believed to be related to injury or occupation. ACC is therefore very unlikely to accept claims).

- The evidence suggests that steroid injections should not be the first line of treatment for Dupuytren's disease as the evidence is unclear (**level B** based on low quality evidence from one SR).

5. **Ganglion cysts** (Note: the cause of this condition is unknown and ACC may be unlikely to accept claims).

- The evidence suggests that steroid injections should not be the first line of treatment for ganglion cysts as the evidence is unclear (**level B** based on low quality evidence from one SR).

Evidence on safety:

- Minor complications associated with steroid injections to the hand are not uncommon, but rarely require significant medical attention (**level A**).

Evidence on the value of imaging (ultrasound guidance):

- The evidence is unclear.

7. Purchasing recommendations

What recommendation(s) does the advisory group draw from this evidence?

Taking the evidence into account, PGAG advises that ACC adopts the following purchasing recommendation:

De Quervain's disease (stenosing tenosynovitis affecting the base of the thumb)

Purchase steroid injections for the short term management of clients with de Quervain's disease, i.e. for up to 12 weeks post-treatment pain relief

Good practice points:

- The efficacy of steroid injections may be improved by offering them in combination with splinting
- Repeat injections may be purchased on a case-by-case basis

Thumb base osteoarthritis

Do not purchase steroid injections for the management of thumb base osteoarthritis

Trigger finger (digital flexor tenosynovitis)

Purchase steroid injections for the short term management of clients with trigger finger, i.e. for up to 12 weeks post-treatment pain relief

Good practice point:

- Surgery may be necessary if long term management is required

These recommendations were ratified by the Clinical Governance Committee in July 2017.

PGAG discussions

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