Staal JB, de Bie R, et al. Injection therapy for subacute and chronic low-back pain. Cochrane Database of Systematic Reviews 2008, Issue 3, Art # CD001824.

Design: Systematic review of randomized clinical trials

PICOS:

- Patient population: Patients aged 18-79 with low back pain symptoms persisting for at least one month
- Intervention: Injection therapy for pain relief at one of three injection sites: facet joints, epidural sites, and local sites
    - Studies of epidural steroids for radicular pain, intradiscal injection, prolotherapy, sacroiliac joint injections, and ozone therapy were excluded
- Comparison: either placebo injection or injection with an active agent
- Outcomes: Pain was the primary outcome; additional important outcomes were global improvement, back-specific disability, generic health, work disability, and patient satisfaction
- Study types: Only randomized clinical trials

Study selection:

- Databases were MEDLINE, EMBASE, and Cochrane CENTRAL through March 2007, with citation tracking of studies found by the search strategy
- Two authors independently assessed studies for inclusion
    - Methodological quality assessment was based on the Cochrane Back Review Group, emphasizing adequate randomization, allocation concealment, blinding, drop-out rate, intention-to-treat analysis, baseline similarity, and similarity of co-interventions
    - Clinical relevance was defined as a 20% improvement in pain scores or a 10% improvement in functional scores
- Because pooling of results by meta-analysis could not be done, the authors defined levels of evidence based on consistency and quality of studies
    - Strong= consistent findings among multiple high quality RCTs
    - Moderate= consistent findings among multiple low-quality RCTs or one high quality RCT
    - Limited= one low quality RCT
    - Conflicting= inconsistent findings among multiple trials
    - No evidence= no RCTs

Results:

- Because studies of radicular pain, intradiscal injection, and radiculopathy were excluded, a total of 18 studies were incorporated into the present review
    - Only 3 studies enrolled more than 100 patients
    - Most studies included low back pain patients with and without sciatica
    - Injection sites of studies could be subdivided into epidural (n=7), facet joints (n=6), and local sites (n=4)

    - 8 studies were considered to be placebo-controlled (3 of which used a local anesthetic as part of the control injection); 10 compared injections with other treatments
- Epidural steroids were compared with placebo in 2 studies; these did not show a significant difference between steroid and placebo for pain relief or other outcomes in the steroid group
    - The authors judged that there was moderate evidence that epidural steroid injections are not significantly different from placebo for short term pain relief
- Epidural steroids were compared with other epidural injections (indomethacin, morphine, and midazolam) in 3 studies) the results provided limited evidence that there was no significant difference between epidural injection with steroid and epidural injection with indomethacin, morphine, and midazolam
- Epidural injections of different local anesthetics (ropivacaine vs. bupivacaine) were compared in 2 studies, yielding moderate evidence that there was no significant difference in analgesia between the two anesthetics
- Facet joint injections with steroids were compared with placebo injections in 2 studies, yielding moderate evidence that facet injection with steroids are not significantly different from placebo injections for short term relief of pain or disability, and limited evidence that there is no significant difference between steroid and placebo on work attendance
- Facet joint injections were compared with a variety of other injections in 4 studies, 3 of which were low quality; the single high quality study yielded moderate evidence that there is no significant difference between facet joint injection with steroids plus anesthetic vs. facet nerve blocks with similar medication
- One high quality study compared peri-articular facet injection with lidocaine followed by steroid vs. peri-articular injection with saline followed by steroid; the group which received lidocaine prior to steroid had more effective short term pain relief than the group whose steroid injection was preceded by saline, yielding moderate evidence that lidocaine is more effective than saline when used just prior to injecting steroid around the facet joint

Authors' conclusions:

- There is no strong evidence to support the use of any injection therapy (epidural, facet joint, local trigger point) for subacute low back pain without radicular pain
- The methodological quality of studies has not improved in recent years, and several remedies are needed
    - A priority needs to be given to placebo-controlled trials, rather than trials comparing injections to similar treatments
    - There needs to be a focus on longer term effects of injections, rather than on only short term effects
    - Standards of methodological quality have become generally known, and need to be followed more closely; in particular, concealment of

allocation, reporting of co-interventions, and intention to treat analysis have been lacking in too many studies

- A major problem is the lack of diagnostic criteria for determining the injection site; localization of pain generators remains difficult
- It is possible that subgroups of back pain patients do benefit from injection, but more research is needed to identify these subgroups

Comments:

- Two pertinent disclosures, generally not reported in Cochrane Reviews, are made concerning agreement between independent reviewers of included studies
    - For the methodological quality (risk of bias), the two reviewers disagreed in 36% of items scored, reaching consensus after discussing the results
    - For clinical relevance, there was disagreement between two reviewers on 30% of items scored, resolved after discussing the items
- The variety of studies and comparisons prevented the reviewers from being able to draw clear conclusions; their reasons for not doing this are well-documented and discussed

Assessment: High quality meta-analysis which does not provide evidence for any injection therapy (epidural, facet, or local) for non-radicular low back pain