TITLE: Aspirating versus not Aspirating Prior to Injection of Medication: Comparative Clinical Evidence and Guidelines

DATE: 21 April 2014

RESEARCH QUESTIONS

1. What is the comparative clinical evidence regarding aspirating versus not aspirating prior to intramuscular injection of medication?

2. What is the comparative clinical evidence regarding aspirating versus not aspirating prior to subcutaneous injection of medication?

3. What are the evidence-based guidelines regarding aspiration prior to injection of medication?

KEY MESSAGE

One systematic review, two randomized controlled trials, one non-randomized study, and one evidence-based guideline were identified regarding the comparative clinical effectiveness of aspirating versus not aspirating prior to intramuscular or subcutaneous injection of medication.

METHODS

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, Issue 4), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No methodological filters were applied to limit retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2004 and April 7, 2014.

The summary of findings was prepared from the abstracts of the relevant information. Please note that data contained in abstracts may not always be an accurate reflection of the data contained within the full article.

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RESULTS

Rapid Response reports are organized so that the higher quality evidence is presented first. Therefore, health technology assessment reports, systematic reviews, and meta-analyses are presented first. These are followed by randomized controlled trials, non-randomized studies, and evidence-based guidelines.

One systematic review, two randomized controlled trials, one non-randomized study, and one evidence-based guideline were identified regarding the comparative clinical effectiveness of aspirating versus not aspirating prior to intramuscular or subcutaneous injection of medication. No health technology assessments were identified.

Additional references of potential interest are provided in the appendix.

OVERALL SUMMARY OF FINDINGS

One systematic review¹ that examined vaccine injection techniques to reduce pain in children suggested rapid intramuscular (IM) vaccine injection without aspiration as one method to achieve this objective.

Two randomized controlled trials²,³ that compared the pain response in infants following “standard” slow IM vaccine injection with aspiration or “pragmatic” fast IM vaccine injection without aspiration were identified. The results demonstrated that a rapid injection technique without aspiration was associated with less acute pain than slow IM injection with aspiration.²,³ The authors recommended the use of the pragmatic IM injection technique for routine infant immunizations.³

One non-randomized study⁴ assessed the effects of four techniques for subcutaneous heparin injections on bruising and pain. The authors observed that performing the air lock injection method without aspiration followed by application of cold to the area surrounding the site reduced the incidence or severity of these adverse events.

One guideline⁵ from the Canadian Medical Association regarding reducing pain in childhood vaccinations was identified. It states that aspiration is not necessary for IM injections because the recommended anatomic sites for IM injections do not contain major blood vessels and it may increase pain when paired with slow injection. Rapid injection without aspiration is thus recommended to reduce pain in children undergoing IM vaccination.
REFERENCES SUMMARIZED

Health Technology Assessments
No literature identified.

Systematic Reviews and Meta-analyses

   Structured abstract available from: www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?AccessionNumber=12009110173#.Uz9KqSg2H3U

Randomized Controlled Trials


Non-Randomized Studies


Guidelines and Recommendations

   See 5. Intramuscular injection techniques, pg E847

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APPENDIX – FURTHER INFORMATION:

Systematic Reviews and Meta-analyses – No Explicit Mention of Aspiration


Non-Randomized Studies – Alternate Outcomes


Clinical Practice Guidelines - Unclear Methodology


See: Section - Route, site and technique for vaccine administration, Table 4 and subsection - Rapid injection without aspiration

See: Section - Route and Site, subsection - Intramuscular (IM) Route (third paragraph), Intradermal (ID) Route (under Technique)

Review Articles

See: Needle aspiration, pg. 124


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Additional References
