

# The Hierarchy of Evidence



The Hierarchy of evidence is based on summaries from the National Health and Medical Research Council (2009), the Oxford Centre for Evidence-based Medicine Levels of Evidence (2011) and Melynyk and Fineout-Overholt (2011).

- I Evidence obtained from a systematic review of all relevant randomised control trials.
- II Evidence obtained from at least one well designed randomised control trial.
- III Evidence obtained from well-designed controlled trials without randomisation.
- IV Evidence obtained from well designed cohort studies, case control studies, interrupted time series with a control group, historically controlled studies, interrupted time series without a control group or with case- series
- V Evidence obtained from systematic reviews of descriptive and qualitative studies
- VI Evidence obtained from single descriptive and qualitative studies
- VII Expert opinion from clinicians, authorities and/or reports of expert committees or based on physiology

Melynyk, B. & Fineout-Overholt, E. (2011). Evidence-based practice in nursing & healthcare: A guide to best practice (2nd ed.). Philadelphia: Wolters Kluwer, Lippincott Williams & Wilkins.

National Health and Medical Research Council (2009). NHMRC levels of evidence and grades for recommendations for developers of guidelines (2009). Australian Government: NHMRC. [http://www.nhmrc.gov.au/\\_files\\_nhmrc/file/guidelines/evidence\\_statement\\_form.pdf](http://www.nhmrc.gov.au/_files_nhmrc/file/guidelines/evidence_statement_form.pdf)

OCEBM Levels of Evidence Working Group Oxford (2011).The Oxford 2011 Levels of Evidence. Oxford Centre for Evidence-Based Medicine. <http://www.cebm.net/index.aspx?o=1025>

Databases searched:	<input type="checkbox"/> CINAHL (Ebsco)	<input type="checkbox"/> Medline (Ebsco)	<input type="checkbox"/> Pubmed (NLM)	<input type="checkbox"/> Nursing (Ovid)	<input type="checkbox"/> Emcare (Ovid)	<input type="checkbox"/> Other List: _____
Keywords used:	Intramuscular injection					
Search limits:						
Other search comments:						

Reference (include title, author, journal title, year of publication, volume and issue, pages)	Evidence level (I-VII)	Key findings, outcomes or recommendations
<i>Administration of vaccines.</i> (2021). The Australian immunisation Handbook. <a href="https://immunisationhandbook.health.gov.au/vaccination-procedures/administration-of-vaccines">https://immunisationhandbook.health.gov.au/vaccination-procedures/administration-of-vaccines</a>	VII	<ul style="list-style-type: none"> <li>- Needle size for patient size</li> <li>- 90 degree angle for needle insertion</li> <li>- Vastus lateralis is recommended in children &lt;12 months and deltoid, ventrogluteal and vastus lateralis is recommended in children &gt;12 months</li> <li>- How to landmark the vastus lateralis, deltoid and ventrogluteal</li> </ul>
Beirne, P. V., Hennessy, S., Cadogan, S. L., Shiely, F., Fitzgerald, T., & MacLeod, F. (2018). Needle size for vaccination procedures in children and adolescents. <i>Cochrane Database of Systematic Reviews</i> , 2018(8). <a href="https://doi.org/10.1002/14651858.cd010720.pub3">https://doi.org/10.1002/14651858.cd010720.pub3</a>	I	<ul style="list-style-type: none"> <li>- Needle size selection plays a role in effective administration</li> <li>- Using a wider gauge needle (23g x 25mm) resulted in a reduction of pain, local reactions and severe reactions in infants</li> </ul>
<i>Intramuscular injections for neonates   Safer Care Victoria.</i> (n.d.). Retrieved February 24, 2022, from <a href="https://www.bettersafecare.vic.gov.au/clinical-guidance/neonatal/intramuscular-injections-for-neonates">https://www.bettersafecare.vic.gov.au/clinical-guidance/neonatal/intramuscular-injections-for-neonates</a>	VII	<ul style="list-style-type: none"> <li>- The vastus lateralis is the preferred site</li> <li>- Only 1ml should be injected</li> <li>- Alcohol swabs are not recommended</li> </ul>
Larkin, T. A., Elgellaie, A., & Ashcroft, E. (2018). Comparison of the G and V methods for ventrogluteal site identification: Muscle and subcutaneous fat thicknesses and considerations for successful intramuscular injection. <i>International Journal of Mental Health Nursing</i> , 27(2), 631-641.	IV	<ul style="list-style-type: none"> <li>- Although the ventrogluteal is recommended over the dorsogluteal, it is still infrequently utilised due to a lack of confidence amongst nurses</li> <li>- Ventrogluteal is deemed safer due to decreased risk of injury to the sciatic nerves or gluteal vessels</li> <li>- Appropriate needle length for administration into the muscle</li> </ul>

<p>Medication administration: intramuscular injection (home health care)- CE. <i>Elsevier</i>. (2021). Retrieved February 24, 2022, from <a href="https://elsevier.health/en-US/preview/intramuscular-injections-hhc">https://elsevier.health/en-US/preview/intramuscular-injections-hhc</a></p>	<p>V</p>	<ul style="list-style-type: none"> <li>- Needle length is determined by the patient's size, age and amount of adipose tissue</li> <li>- Aspirating for blood is not supported by research</li> <li>- The recommended route and site is included in manufacturer instructions</li> <li>- Up to 3mls can be administered in the ventrogluteal, 4mls in the dorsogluteal and up to 5mls can be administered into the vastus lateralis (in adults)</li> <li>- Z-tracking helps prevent medication leakage</li> <li>- How to landmark the vastus lateralis, deltoid and ventrogluteal (dorsogluteal is not recommended)</li> </ul>
<p>Ogston-Tuck, S. (2014). Intramuscular injection technique: an evidence-based approach. <i>Nursing standard</i>, 29(4).</p>	<p>V</p>	<ul style="list-style-type: none"> <li>- A large volume of medication can be injected because of the rapid absorption into the bloodstream through muscle fibres</li> <li>- The deltoid has a small muscle mass. A maximum of 2mls can be injected (1ml is recommended). It is a good site for immunisations</li> <li>- Up to 3mls can be administered in the ventrogluteal, 4mls in the dorsogluteal and up to 5mls can be administered into the vastus lateralis (in adults)</li> <li>- The department of health recommends that volumes above 4mls be administered in divided doses</li> </ul>
<p>Rishovd, A. (2014). Pediatric intramuscular injections: guidelines for best practice. <i>MCN: The American Journal of Maternal/Child Nursing</i>, 39(2), 107-112.</p>	<p>V</p>	<ul style="list-style-type: none"> <li>- Aspirating for blood is strongly discouraged. It increases pain, and is not necessary due to the absence of large blood vessels at the site</li> <li>- Nurses should be familiar with the anatomy of IM sites and how to correctly identify each site by the presence of bony landmarks</li> <li>- Vastus lateralis is the preferred site for birth to 2yrs and the deltoid is preferred for children 3-18years once adequate muscle mass has developed</li> </ul>
<p>Shepherd, E. (2018). Injection technique 1: administering drugs via the intramuscular route. <i>Nursing Times</i>, 114(8), 23-25.</p>	<p>V</p>	<ul style="list-style-type: none"> <li>- Inject to the hub</li> <li>- Aspirating not required (but may be done for dorsogluteal)</li> <li>- Gloves do not need to be worn</li> </ul>