

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

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 checked="" type="checkbox"/> CINAHL (Ebsco)	<input type="checkbox"/> Medline (Ebsco)	<input type="checkbox"/> Pubmed (NLM)	<input type="checkbox"/> Nursing (Ovid)	<input type="checkbox"/> Emcare (Ovid)
Keywords used:	Vaccine, immunisation, needle, injection, coverage, needle size, pain				
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
Hull B P, Hendry A, Dey A, Macartney and Beard F. (2019). Annual Immunisation Coverage Report 2019. https://www.ncirs.org.au/sites/default/files/2020-11/NCIRS%20Annual%20Immunisation%20Coverage%20Report%202019%20Final.pdf	VII	Data provided in this report reflect continuing successful delivery of the NIP in Australia, while identifying some areas for improvement. Coverage for rotavirus vaccine, varicella vaccine and the second dose of MMR vaccine is below that for other vaccines. Timeliness of vaccination could be improved, particularly for Indigenous children.
National Health and Medical Research Council (NHMRC). The Australian Immunisation Handbook, https://immunisationhandbook.health.gov.au/	VII	Clinical guidelines for health professionals on the safest and most effective use of vaccines in their practice. Recommendations developed by the Australian Technical Advisory Group on Immunisation (ATAGI) and approved by the National Health and Medical Research Council (NHMRC).
Grayson ML, Russo P, Ryan K, Havers S and Heard K. (2013) Hand Hygiene Australia - 5 moments for hand hygiene. Australian Commission on Safety and Quality in Healthcare, 2013.	VII	Provides a practical step-by-step guide to implementing and sustaining the Hand Hygiene culture change in hospitals and how to participate in the National Hand Hygiene Initiative.
Hutin Y, Hauri A, Chiarello L, Catlin M, Stilwell B, Ghebrehiwet T and Garner J (2003). Best infection control practices for intradermal, subcutaneous, and intramuscular needle injections. <i>Bulletin of the World Health Organization</i> , 81:491-500	VI	When intradermal, subcutaneous, or intramuscular injections are medically indicated, best infection control practices include the use of sterile injection equipment, the prevention of contamination of injection equipment and medication, the prevention of needle-stick injuries to the provider, and the prevention of access to used needles.

<p>Diggle L, Deeks JJ, Pollard AJ (2006). Effect of needle size on immunogenicity and reactogenicity of vaccines in infants: randomised controlled trial, <i>British Medical Journal</i>;333:571.</p>	<p>II</p>	<p>Local reactions to vaccinations decreased significantly with wide, long needles compared with narrow, short needles. Non-inferiority of the immune response was shown using a wide, long needle rather than a narrow, short needle. Little difference was found between needles of the same length but different gauges in local reaction or immune response.</p>
<p>Harrison D, Elia S, Manias E and Royle J (2014). Sucrose and lollypops to reduce immunisation pain in toddlers and young children: Two pilot randomised controlled trials. <i>Neonatal, Paediatric & Child Health Nursing</i>, 17(1): 19-26</p>	<p>II</p>	<p>Interventions, standard care and all aspects of the study were acceptable to children, parents and immunisation nurses. There were no significant differences in crying time or pain scores between intervention and control groups in either pilot RCT. The study interventions were acceptable to children and parents.</p>
<p>Jenkins, N Orsini F, Elia S & Perrett K (2020). Minimising immunisation pain of childhood vaccines: the MIP pilot study. <i>Journal of Paediatrics and Child Health</i> https://doi.org/10.1111/jpc.15229</p>	<p>II</p>	<p>This RCT paper assesses the feasibility and acceptability of two novel devices; Coolsense (cold) and Buzzy (vibration +/- cold pads) versus standard care to minimise pain during immunisation. The study achieved its aim of demonstrating feasibility.</p>
<p>Taddio A, Appleton M, Bortolussi R, Chambers C, Dubey V, Halperin S, Hanrahan A, Ipp M, Lockett D, MacDonald N, Midmer D, Mousmanis P, Palda V, Pielak K, Pillai Riddell R, Rieder M, Scott J and Shah V (2010). Reducing the pain of childhood vaccination: an evidence-based clinical practice guideline. <i>CMAJ Canadian Medical Association Journal</i>;182:E843-55</p>	<p>V</p>	<p>This paper looks at the evidence of practice recommendations to reduce pain. The practice recommendations were breastfeeding, sweet tasting solutions, brand of vaccine, position of child, intramuscular injection technique, order of injections, tactile stimulation, distraction and coaching, topical anesthetics, clinician led distraction, child led distraction, breathing techniques, combined psychological interventions, simple suggestions that “it won’t hurt”, skin cooling techniques, multiple injections, routes of administration and oral analgesics.</p>