



Interventions for reducing pain, fear and distress: Childhood immunisation

Intervention

Procedural interventions refer to injection techniques and strategies.

Physical interventions include age-appropriate activities (eg skin-to-skin contact), posture and body position (eg child sitting upright).

Process interventions refer to teaching pain-management strategies to clinicians, parents and children.

Psychological interventions include distraction.

Indication

Vaccine injections are the most common cause of iatrogenic pain in childhood.

Pain, fear or distress associated with childhood immunisation.

Availability

A 2015 clinical practice guideline (based on published evidence summarised in this entry) provides 'strong' and 'weak' recommendations for the interventions described below (see Description). The guideline also includes additional age-appropriate interventions and recommendations not included [here](http://www.cmaj.ca/content/187/13/975.long).
www.cmaj.ca/content/187/13/975.long

Description

Procedural interventions

No aspiration (strong recommendation)

For children of all ages, avoiding aspiration before intramuscular vaccine injections reduces pain and distress. Aspiration, which causes pain due to the combination of longer needle dwelling time and the sheering action of the needle, is unnecessary for vaccination injections because the injection sites lack major blood vessels.

Simultaneous rather than sequential injections (strong recommendation)

For infants up to 12 months, simultaneous injections are associated with less distress.

Most painful vaccine last (strong recommendation)

For all age groups, when more than one vaccine injection is scheduled for the same visit, injecting the most painful vaccine last decreases distress, perhaps because pain can escalate with each subsequent injection due to hyperalgesia. Painful vaccines that should be given last include M-M-R®II and pneumococcal conjugate vaccine (PCV).

Choice of injection site (weak recommendation)

For infants up to 12 months, vastus lateralis rather than deltoid injection leads to less distress.



Physical interventions

Sitting upright (rather than the child lying supine) (strong recommendation)

For children three years and older, sitting upright decreases pain and fear. Children can sit on a parent's lap or sit upright on their own, although restraint may heighten distress.

Holding (rather than the child lying supine) (strong recommendation)

For children up to three years, holding the child in a comfortable and close position during the injection reduces distress, as does holding with rocking and/or patting the child following the injection.

Skin-to-skin contact during vaccine injection (strong recommendation)

For neonates up to one month, skin-to-skin contact reduces distress. For example, 'kangaroo care', which involves placing a nappy-clad infant on the bare chest of the mother.

Sucking (weak recommendation)

Even non-nutritive sucking using a finger, thumb or pacifier reduces distress.

Process interventions

Based on data from 13 studies, there are improvements in the reduction of pain, fear or distress when:

- Clinicians are educated about vaccine injection, pain prevention and management (strong recommendation).
- Parents are educated on the day of immunisation (strong recommendation)
- Parents are present during immunisation for children under 10 years (strong recommendation).
- Children aged three years or older receive education on the day of vaccination (strong recommendation).

Psychological interventions

In children aged three years or younger, there is less distress with both directed video and toy distraction, and non-directed toy distraction (weak recommendation).

Note: 'Directed' refers to studies in which an adult attempts to engage the young child in the distraction, whereas 'non-directed' refers to studies in which the child is just exposed to distractors.

For older children, verbal, video and music distraction, and breathing with a toy (eg blowing bubbles or a pin-wheel) reduces pain, fear and distress (weak recommendation).

Tips and challenges

[Sweet solutions](http://www.racgp.org.au/your-practice/guidelines/handi/interventions/children/sweet-solutions-for-procedural-pain-in-infants/) may be given to infants in conjunction with or as an alternative to these interventions for infants. (Refer to HANDI – [Sweet solutions: Procedural pain in infants up to 12 months](http://www.racgp.org.au/your-practice/guidelines/handi/interventions/children/sweet-solutions-for-procedural-pain-in-infants/) - www.racgp.org.au/your-practice/guidelines/handi/interventions/children/sweet-solutions-for-procedural-pain-in-infants/)

Where appropriate, breastfeeding during vaccine injection can reduce distress through multiple mechanisms such as physical comfort, distraction and ingestion of a sweet-tasting substance.



Grading

NHMRC Level 1 evidence.

References

Birnie KA, Chambers CT, Taddio A, et al. Psychological interventions for vaccine injections in children and adolescents: Systematic review of randomised and quasi-randomised controlled trials. *Clin J Pain* 2015;31(10 Suppl):S72–89. www.ncbi.nlm.nih.gov/pubmed/26348163

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Taddio A, Shah V, McMurty M, et al. Procedural and physical interventions for vaccine injections: Systematic review of randomised controlled trials and quasi-randomised controlled trials. *Clin J Pain* 2015;31(10 Suppl):S20–37. www.ncbi.nlm.nih.gov/pubmed/26352919

Consumer resources

National Immunisation Program Schedule
www.immunise.health.gov.au/internet/immunise/publishing.nsf/Content/national-immunisation-program-schedule