

**Author(s):** VS/AT

**Date:** 2015-03-05

**Question:** Should no aspiration during intramuscular injection vs aspiration be used for reducing vaccine injection pain in people of all ages?

**Settings:** clinics, hospital

**Bibliography:** Girish 2014, Ipp 2007, Petousis-Harris 2013 (1,2)

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	No aspiration during intramuscular injection	Aspiration	Relative (95% CI)	Absolute		
Pain <sup>1,2</sup> (measured with: validated tool (Visual Analog Scale 0-10); Better indicated by lower values)												
1	randomised trials <sup>3,4</sup>	very serious <sup>3,5,6</sup>	no serious inconsistency	no serious indirectness	serious <sup>7</sup>	none	79	35	-	SMD 0.28 higher (0.12 lower to 0.68 higher) <sup>1,2</sup>	⊕○○○ VERY LOW	CRITICAL
Distress Acute (measured with: validated tools (Visual Analog Scale 0-10, Modified Behavioural Pain Scale 0-10) by researcher, parent; Better indicated by lower values)												
2	randomised trials <sup>8</sup>	very serious <sup>5,9</sup>	no serious inconsistency	no serious indirectness	serious <sup>10</sup>	none	156	157	-	SMD 0.82 lower (1.18 to 0.46 lower)	⊕○○○ VERY LOW	CRITICAL
Distress Acute (yes/no) (assessed with: validated tool (cry yes/no) by researcher)												
1	randomised trials <sup>8</sup>	very serious <sup>5,9</sup>	no serious inconsistency	no serious indirectness	serious <sup>10</sup>	none	24/56 (42.9%)	47/57 (82.5%)	RR 0.52 (0.38 to 0.72)	396 fewer per 1000 (from 231 fewer to 511 fewer)	⊕○○○ VERY LOW	CRITICAL
								0%		-		
Distress Acute + Recovery (measured with: validated tool (cry duration) by researcher; Better indicated by lower values)												
1	randomised trials	very serious <sup>5,9</sup>	no serious inconsistency	no serious indirectness	serious <sup>7</sup>	none	100	100	-	MD 0.27 lower (0.55 lower to 0.01 higher) <sup>11</sup>	⊕○○○ VERY LOW	CRITICAL

Procedure Outcomes, Vaccine Compliance, Satisfaction, Preference (assessed with: no data were identified for these important outcomes)											
0	No evidence available					none	-	-	-	-	IMPORTANT
								0%		-	

<sup>1</sup> Additional study details and data provided by author (Petousis-Harris 2013)

<sup>2</sup> The sample size for the no aspiration group was divided by 2

<sup>3</sup> In the included study by Petousis-Harris (2013), a cross-over design was used. Only data from the 1st day was included in the analysis; hence, this trial was treated as a parallel design, due to a high dropout rate (>30%).

<sup>4</sup> In Petousis-Harris 2013 (1), a fast injection speed without aspiration was compared to a slow injection speed with aspiration. In Petousis-Harris 2013 (2), a slow injection speed without aspiration was compared to a slow injection speed with aspiration.

<sup>5</sup> Immunizer not blinded; outcome assessor blinded

<sup>6</sup> No difference was reported between duration of injection between the slow injection without aspiration and slow injection with aspiration groups. Differences were noted in baseline characteristics and some injections may have been given in the incorrect anatomic site.

<sup>7</sup> Confidence interval crosses line of nonsignificance and sample size was below the recommended optimum information size (OIS) of 400 for an effect size of 0.2

<sup>8</sup> In the included studies by Ipp (2007) and Girish (2014), a fast injection speed without aspiration was compared to a slow injection speed with aspiration

<sup>9</sup> Speed of injection a potential confounder

<sup>10</sup> Sample size was below the recommended optimum information size (OIS) of 400 for an effect size of 0.2

<sup>11</sup> Scores not standardized