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Question: Should simultaneous injections vs sequential injections be used for reducing vaccine injection pain in infants?

Settings: community health centres

Bibliography: Hanson 2010, McGowan 2013

Quality assessment							No of patients		Effect		Quality	Importance
No of studies	Design	Risk of bias	Inconsistency	Indirectness	Imprecision	Other considerations	Simultaneous injections	Sequential injections	Relative (95% CI)	Absolute		
Distress Acute ¹ (measured with: validated tools (Neonatal Infant Pain Scale 0-7, Modified Behavioral Pain Scale 0-10) by researcher; Better indicated by lower values)												
2	randomised trials ²	serious ³	no serious inconsistency	no serious indirectness	serious ⁴	none	86	86	-	SMD 0.56 lower (0.87 to 0.25 lower) ^{1,5}	⊕⊕○○ LOW	CRITICAL
Distress Recovery ⁶ (measured with: validated tools (Modified Behavioral Pain Scale 0-10) by researcher; Better indicated by lower values)												
1	randomised trials	serious ⁷	no serious inconsistency	no serious indirectness	serious ⁴	none	36	35	-	SMD 0.76 lower (1.24 to 0.28 lower) ^{6,8}	⊕⊕○○ LOW	CRITICAL
Distress Acute + Recovery Unclear ⁶ (measured with: validated tool (Visual Analog Scale 0-10) by parent; Better indicated by lower values)												
1	randomised trials	serious ⁷	no serious inconsistency	no serious indirectness	serious ⁹	none	37	36	-	SMD 0.11 higher (0.35 lower to 0.57 higher)	⊕⊕○○ LOW	CRITICAL
Procedure Outcomes, Parent Fear, Vaccine Compliance, Preference, Satisfaction (assessed with: no data were identified for these important outcomes)												
0	No evidence available					none	-	-	-	-		IMPORTANT
								0%		-		

¹ Additional study details and data provided by authors (Hanson 2010, McGowan 2013)

² In 1 study by Hanson (2010), 3 injections (DTP-Hib, Hepatitis B, PCV) were given: in the simultaneous group, the first 2 were given simultaneously then the 3rd was given up to 15 seconds later; in the sequential group, all 3 were given sequentially with up to 15 seconds between each injection. In 1 study by McGowan (2013), 2 injections (DTaP-IPV-Hib and PCV or DTaP-IPV-Hib and Men) were given simultaneously or sequentially

³ Immunizers and parents not blinded in both studies; outcome assessor blinded in one study (Hanson 2010)

⁴ The sample size was below the recommended optimum information size (OIS) of 400 for an effect size of 0.2

⁵ In 1 study (McGowan 2013), a total sample size of 73 was used for summary of effect

⁶ Additional study details and data provided by author (McGowan 2013)

⁷ Immunizers and parents not blinded; outcome assessor not blinded

⁸ In 1 study (McGowan 2013), a total sample size of 71 was used for summary of effect

⁹ 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