Appendix 1 (as supplied by the authors): Age-based algorithm for reducing vaccination pain in infants and young children

Recommendations for Reducing Vaccination Pain in Children 0-3 years

Ahead At vaccination visit **During vaccination** of time No aspiration Most painful last **Procedural** AND/OR **Strategies** Simultaneous injection (0-1 yr) Vastus lateralis (0-11 months) Breastfeeding before, during and after injection (0-2 yr)* • Positioning - skin to skin (0-1 month) or holding (0-3 yr) before, **Physical** during and after injection **Strategies** Sweet-tasting solution – sucrose or glucose before injection (0-2 yr)** Sucking/pacifier before, during and after injection (0-2 yr) Distraction: toy, video **Psychological** Interaction/Wording: **Strategies** DO: use neutral words to signal the impending procedure DON'T: use repeated reassurance, suggest it will not hurt Topical anesthetics: Pharmacological liposomal lidocaine, amethocaine, **Strategies** or lidocaine-prilocaine 20-60 minutes before injection*** **Process**

Strategies

- Education about pain management for providers and caregivers
- Caregiver presence
- * Alternatives include bottle feeding
- ** Alternatives include oral rotavirus vaccine (in infants scheduled to receive it at the same time as injectable vaccines)
- *** Check product monograph



Recommendations for Reducing Vaccination Pain in Children 3-12 years

Ahead At vaccination visit **During vaccination** of time Procedural No aspiration **Strategies** Most painful last • Positioning – sitting upright **Physical** · External vibrating device with cold **Strategies** • Muscle tension (≥ 7 yrs, if history of fainting) · Distraction: music, video, verbal, breathing with a toy **Psychological** (e.g., blowing bubbles, pinwheel) **Strategies** Interaction/Wording: DO: use neutral words to signal the impending procedure DON'T: use repeated reassurance, suggest it will not hurt Topical anesthetics: liposomal lidocaine, Pharmacological amethocaine, or lidocaine-Strategies prilocaine 20-60 minutes before injection* **Process Strategies** • Education about pain management for providers, caregivers and children • Caregiver presence (0-10 years) Strategies for High **Needle Fear** • Exposure-based therapy

 Applied tension (≥ 7 yrs, if history of fainting)

(≥ 7 yrs)



^{*} Check product monograph

Appendix 3 (as supplied by the authors): Age-based algorithm for reducing vaccination pain in adolescents

Recommendations for Reducing Vaccination Pain in Adolescents 12-17 years

Ahead At vaccination visit **During vaccination** of time No aspiration **Procedural** · Most painful last **Strategies** • Positioning – sitting upright **Physical** External vibrating device with cold **Strategies** · Muscle tension (if history of fainting) Interaction/Wording: **Psychological** DO: use neutral words to signal the impending procedure Strategies DON'T: use repeated reassurance, suggest it will not hurt Topical anesthetics: **Pharmacological** liposomal lidocaine, amethocaine, **Strategies** or lidocaine-prilocaine 20-60 minutes before injection* **Process Strategies** • Education about pain management for providers, caregivers and individuals Strategies for High

Strategies for High Needle Fear

- Exposure-based therapy
- Applied tension (if history of fainting)



^{*} Check product monograph

Recommendations for Reducing Vaccination Pain in Adults

Ahead of time

At vaccination visit

During vaccination

Procedural Strategies

- No aspiration
- ategies Most painful last

Physical Strategies

- Positioning sitting upright
- · Muscle tension (if history of fainting)

Psychological Strategies

- Breathing interventions (cough, breath-hold)
- Interaction/Wording:

DO: use neutral words to signal the impending procedure DON'T: use repeated reassurance, suggest it will not hurt

Pharmacological Strategies

- Topical anesthetics: liposomal lidocaine, amethocaine, or lidocaine-prilocaine 20-60 minutes before injection*
- Vapocoolant right before injection

Process Strategies

• Education about pain management for providers and individuals

Strategies for High Needle Fear

- Exposure-based therapy
- Applied tension (if history of fainting)



^{*} Check product monograph