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Making Immunizations Comfortable for Children and Parents

AMA Highlights & Resources

Led by
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Solutions for Kids in Pain (SKIP)

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Report

Highlights

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Pain during vaccination - it only lasts a minute, or does it?

How many of you have said '*it only lasts a minute*' to a child or parent right before vaccinating the child? Often clinicians dismiss the pain from needle injections because injections are seen as minor relative to other procedures, and so not worthy of any intervention. But we now know that even "minor" needle injection pain such as from vaccinations can have negative effects that last a lifetime.

In the short-term, needle injections cause unnecessary pain and suffering. In the long-term, people can learn to associate needles with pain or other negative experiences (e.g., being held down) and become afraid of them.

About 2/3 of children and 1/4 of adults have some fear of needles and around 5-10% have an extreme fear of needles. Fear can affect willingness to be vaccinated: as many as 5-10% of people are estimated to avoid or delay vaccinations because of concerns about pain and/or fear of needles!

We developed a clinical practice guideline in 2015 that reviews evidence-based interventions to reduce pain and associated symptoms (fear, fainting) during vaccine injections across the lifespan. Importantly, most interventions are easy to use and cost no money. In this series, we will highlight the ones that can have the biggest impact on your practice.

Here are some things clinicians have told us they use to help their patients get through vaccinations. Tell us which of these strategies you commonly use:

Poll results

Distraction: 36%

Topical anesthetics (e.g., lidocaine-prilocaine cream): 18%

Oral analgesics/antipyretics (e.g., acetaminophen, ibuprofen): 9%

Injecting vaccines slowly: 0%

Limiting the number of vaccines given in one appointment: 0%

Telling patients "it won't hurt": 0%

Asking parents to help restrain the child: 9%

Breastfeeding for infants: 23%

Deep breathing: 5%

Muscle tension: 0%

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Managing pain in infants

Q: My patient wants to breastfeed her infant during vaccination. I am concerned about choking. Isn't it better to just breastfeed after?

A: There are many effective ways to reduce distress during vaccine injections in babies. The most effective is breastfeeding. Breastfeeding combines close physical contact and holding with sucking and sweet taste. Babies' legs should be positioned so that they can be accessed for injections. Contrary to popular belief, it is best commenced before the injection and continued during and afterwards, although there is some benefit if done either before or afterwards only. Breastfeeding is safe for babies – there are no reports of choking from clinical trials. If babies want to cry, they simply swallow the milk that is in their mouth and then break the latch and cry. They settle more quickly when they are breastfeeding and simply resume when they are calm again.

If breastfeeding is not possible, then simulating breastfeeding is the best strategy. This includes holding babies close and using a pacifier and exogenous sweet tasting solutions (sugar water). In 2 and 4-month old infants, sugar water is not needed because oral rotavirus vaccine, which contains sugar as a flavouring agent, is usually administered with injectable vaccines and can be given first to achieve the calming effect of sugar water.

Here are two videos about helping infants with vaccinations:

- Be Sweet to Babies
- Reduce the pain of vaccination in babies

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What should I be saying to my patient before, during, and after the vaccination? What can I encourage parents to say to their children?

Here's what to do and say:

- Speak calmly, confidently, and warmly.
- If your patient or their caregiver asks about pain, acknowledge the variability in experience AND then indicate what will be done to manage pain. For example:
    - *"Some people say it hurts and others say it doesn't bother them. Here's how we are going to help make it as comfortable as possible.*
- Distraction: talk about age appropriate things other than the procedure before, during, and after.
- Encourage use of other age-appropriate forms of distraction (e.g., phones, tablet, singing, reading, playing with toys)
- Use a neutral way to signal the injection (e.g., 1, 2, 3… here we go).

Avoid these things as they aren't helpful:

- Do not repeatedly reassure (e.g., say *"it's okay"* or *"almost done"* over and over again). This seems to act as a signal of worry.
- Do not say it won't hurt. This is not typically true and you will have lost credibility.

What about parents and caregivers?

- Patient preferences are important and should be supported when possible as part of patient and family centered care. Many children prefer to have their parent present.
- Calm parents are excellent supports who can encourage their children to cope.
- Parents can help distract their children too.
- Nervous or worried parents can be supported to take a few deep breaths, distract and be calm and confident for their children.

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Turning Evidence into Action: How do we change the face of vaccination to one without pain?

Minimizing pain during vaccination requires that everyone that is involved in the process knows what to do and participates in the process. Educational interventions such as videos and pamphlets improve knowledge in children, parents, and clinicians and lead to increased use of effective pain interventions. Help your patients, families and yourself have a more positive experience with vaccination by minimizing pain. This not only reduces unnecessary suffering, it promotes vaccination!

What about COVID-19?

COVID-19 is accompanied by a plethora of media, some of which is focused on effects on current vaccine uptake, the potential for a COVID-19 specific vaccination, and anti-vaccination movements. Some preliminary research suggests that if a COVID-19 vaccine becomes available, about 1 in 5 people will opt not to get it. Vaccine hesitancy is complex BUT pain is a well-documented barrier to vaccination. Remove this barrier and make it easier for people to get vaccinated. Remember that pain management is always possible – vaccinations are planned ahead of time and pain management strategies can be planned. There is no excuse.

Here are some resources developed from our clinical practice guideline for pain management in different ages you can use and share to teach everyone:

· Algorithms: infants and young children, children, adolescents, and adults

· Pamphlets: infants and young children, children and adolescents, children of all ages

· Videos: infants and young children, children and adolescents, children

· Website (with videos and pamphlets): adolescents

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What about patients who have a severe fear of needles? Do the regular pain and distress management strategies work for them?

So far, Anna and I have reviewed procedural, physical, psychological, and pharmacological strategies to reduce pain and distress during vaccinations. These evidence-based strategies are effective for pain in individuals with low to moderate levels of fear. **But for individuals with high levels of fear, a different approach is needed.** High levels of fear are characterized by persistent significant distress immediately, before, during and after a needle; individuals with extreme fear (proximal alarm reaction) and anxiety (anticipatory worry about future event) of needles more characteristic of a phobia may avoid vaccination and other related situations entirely. For more details including how we understand fear, anxiety, fainting, and pain in the context of needles and the major negative impacts that unmanaged pain and fear can have during vaccinations see this paper.

How do you screen for high levels of needle fear? In our CPG, we recommended the following approach:

- For children over 10 years and adults:
  - *How afraid of needles are you – not afraid, a little bit, moderately, a lot, or the most afraid possible?*
  - *Do you think this is higher than it should be?*
  - *Do you avoid getting needles because you are afraid?*
- Parents of children can be asked analogous questions.
- Younger children (5-10 years) can be asked:
  - *How scared of needles are you - not at all scared; a little bit; moderately; a lot; the most possible?*
  - *Do you try really hard to miss getting the needle because you are so scared?*

If the answers suggest a high level of fear (+/- avoidance), then the needle should be postponed until the fear has been addressed so that the person can benefit from typical pain management strategies and the situation isn't exacerbated leading to further health care avoidance.

Individuals who have a high fear of needles need exposure based therapy (delivered or facilitated by a trained mental health professional) before they are likely to benefit from the typical pain and distress management strategies. We'll talk about how high levels of needle fear can be treated on Wednesday.

In recent work for WHO, the understanding and management of immunization stress-related responses have been highlighted (original guidance manual; peer reviewed paper; summary for healthcare professionals). Individuals with high needle fear are more likely to show immunization stress-related responses, such a vasovagal (fainting) response to needles. Screening for a history of fainting in relation to needles is also important so that muscle tension can be utilized.

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Procedural, Physical and Pharmacological Interventions

Our 2015 Clinical Practice Guideline includes different categories of interventions that can reduce pain, fear and fainting, including Procedural, Physical and Pharmacological. Most are applicable to all age groups – from infants to adults.

Procedural – injection technique

There are two injection techniques that clinicians can use that can make a big difference to reducing pain during vaccination:

· Not aspirating prior to injection and injecting vaccines quickly

· Injecting the most painful vaccine last if more than one vaccine is being given in the same sitting

Physical – body positioning and activity

Across the lifespan, body positioning and activity has been shown to affect pain. The following strategies are recommended:

· Holding in infants and sitting upright in children and adults. Children can sit on a parent's lap in a hugging position. Refrain from restraining infants and children – this increases distress.

· For individuals with a history of fainting, use muscle tension (systematically tensing and releasing large muscle groups to prevent a precipitous fall in blood pressure - here's how to do it)

Pharmacological – pain medicine

Topical local anesthetics are the only consistently effective and safe pharmacological intervention for managing vaccination pain across the lifespan. Some planning is needed as they must be acquired ahead of time and take between 30 and 60 minutes to be effective. Oral antipyretic/analgesics, such as acetaminophen and ibuprofen have not been demonstrated to reduce needle pain and should not be used for this purpose.

See our guideline for more information: https://www.cmaj.ca/content/cmaj/187/13/975.full.pdf

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How do you treat high levels of needle fear?

Needle fear exists on a spectrum from low levels that would be considered normative in the context of vaccinations to high which would be associated with significant distress before, during, and after vaccinations (e.g., freezing, screaming, attempts to flail). **A phobia is characterized by extreme fear and extreme anxiety and can lead to avoidance of needles and needle-related contexts. About 5% of individuals have a phobia related to needles (called blood injection injury phobia) and about 10% have high needle fear.**

In our post yesterday, we talked about the importance of screening for high levels of needle fear given that it requires a different kind of intervention than the pain and distress management ones implemented at the time of vaccinations. **The point is to stop the increasing cycle of needle fear, pain, and avoidance that is typical when high needle fear has developed as it typically doesn't go away on its own once established**. Once the high needle fear is addressed the person can then benefit from the typical pain and distress management strategies.

What kind of treatment is recommended for individuals with high levels of needle fear?

In our CPG about the treatment of individuals with high levels of needle fear, we recommend various forms of exposure-based treatment for high levels of needle fear. This treatment would be delivered by a mental health specialist. Exposure-based interventions fall under the umbrella of Cognitive Behavioral Therapy and essentially involve facing the fear head on in a controlled way. A hierarchy is created based on the personalized fear ratings of the individual, from lowest to highest. The individual is then "exposed" to each step of the hierarchy and stays in the situation until: their fear reduces to a minimal level, they realize that whatever they are most worried about hasn't happened and/or if the worst happens, they can survive it.

*Once the individual got to this step, the typical pain management strategies could be used to assist in getting through the procedure.

Individuals who show a fainting response and are highly fearful have hierarchies that address both concerns by incorporating muscle tension into the exposures.

Resources:

- Our CPG on treating high levels of needle fear - extra info in the supplementary material
- CANVax Podcast on needle fear (see episode 3)
- Blog: Nervous about needles?

Report

Resource Appendix

[Reducing pain during vaccine injections: clinical practice guideline]

[Far from “Just a Poke”: Common Painful Needle Procedures and the Development of Needle Fear]

[Be Sweet to Babies: CHEO Video]

[It Doesn’t Have to Hurt: IWK Video]

[Strategy for Needle Related Fainting]

[Exposure-based Interventions for the management of individuals with high levels of needle fear across the lifespan: a clinical practice guideline and call for further research]

[CANVax Podcast (Episode 3)]

[Nervous About Needles?: Blog Post]

Immunize Canada

- [Pain Management During Immunizations for Children]
- [Pain Management During Immunizations for Kids and Adolescents]
- [Needles don’t have to hurt: Immunization guide for children of all ages]

AboutKidsHealth

- [AboutKidsHealth: CARD Learning Hub]
- [Reduce the pain of vaccination in babies: video]
- [Reduce the pain of vaccination in children: video]

Immunization Stress-Related Responses

- [Original guidance manual]
- [Peer reviewed paper]
- [Summary for healthcare professionals]