

## Long-term consequences of procedural pain

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## Acknowledgements

### Funding & support:



### Trademark:



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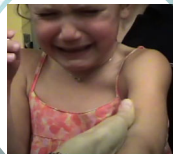
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## Case



Sarah is 5 years old.

She is not vaccinated against COVID-19. She is very afraid of needles. The last time she got a needle, her dad held her down. It was very stressful for everyone.

What do you recommend?

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## Learning objectives

By the end of this presentation, you will be able to:

1. Problem of pain: Discuss the rationale for treating pain, fear and associated stress-related responses during needle procedures in children
2. Implementing best evidence: Identify ways to incorporate evidence-based interventions into the process of procedures to improve the experience for children, providers and onlookers.

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## 1. Problem of Pain

**Definition:** "An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage." (IASP, 2020)

- Pain is *subjective*
- Verbal report considered *gold standard*

(IASP - International Association for the Study of Pain)

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## Epidemiology of Needle Pain

### 1. Routine medical care:

Newborns: Vitamin K injection + newborn screening test

Children: ~ 4 dozen vaccine injections

Adults: ~ 1 blood test + vaccine injection/year



### 2. Hospitalization:

~1 needle procedure per day

### 3. Chronic condition:

+++ needle procedures

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### Patient experience



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### Patient experience



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### Dimensions of Care affected by Pain



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### Dimensions of Care affected by Pain



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### Health Outcomes

#### 1. Acute adverse effects

- More fear
- More pain
- Immunization stress related reactions (ISRR)
- Injury from falls due to fainting, technical errors (e.g., shoulder-injury related to incorrect vaccine administration)
- Difficulty carrying out procedures (flailing, restraining)
- Repeat procedures (due to failed procedures)
- Need for sedation, higher doses of sedation, re-scheduling of procedures, involvement of additional personnel and resources

WHO 2019; McMurty 2015 Clin J Pain 2015;31:S3-S11

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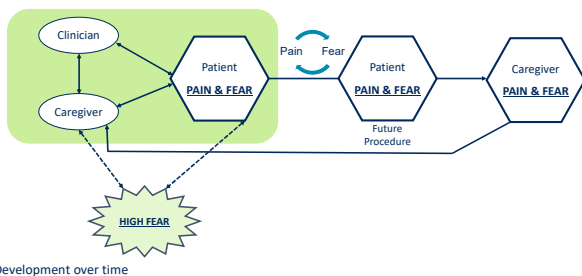
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### Pain and fear can exacerbate each other in an escalating relationship



McMurty et al. (2016)

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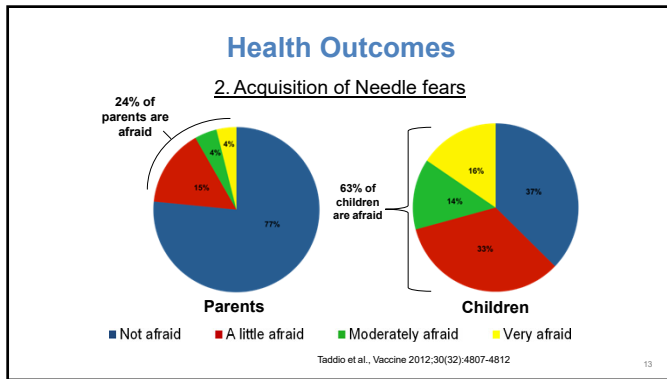
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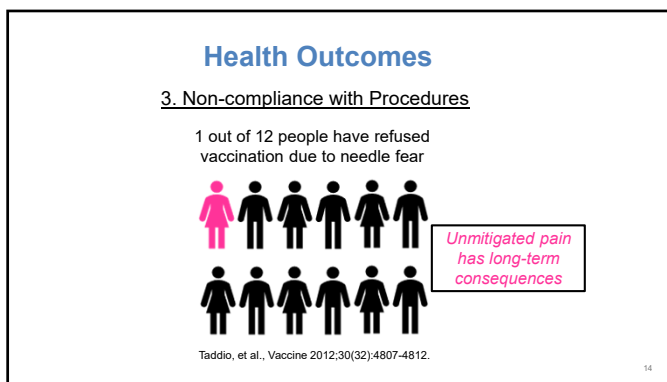
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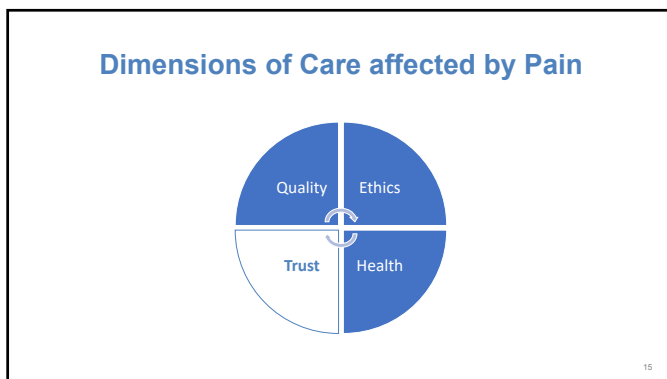
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## Satisfaction and Trust



### 1. Children care about needle pain

- Children report needles as more painful than adults do (Goodenough 2008; Schneider & LoBiondo-Wood 1992)
- Children regard any needle procedure one of the most frightening and painful health-related events (Cummings 1996; Ellis 2004; Humphrey 1992)
- The majority of young children exhibit moderate-severe distress during needle procedures (Humphrey 1992; Fradet 1990; Jacobson 2001)

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## Satisfaction and Trust

### 2. Parents care about needle pain

- Parents are distressed about pain; parent stress can impact child
- Parents are unprepared to manage child pain
- Parents expect pain to be managed (everything that could be done is done)

Forgeron 2006; Franck 2004/5/11; Mantell 2014; Melnyk 2000; Parvez 2009; Smith 2007; Taddio 2018; Twycross 2015; Tiedeman 1997

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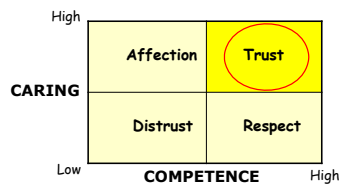
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## Satisfaction and Trust

**TRUST = Competence + Caring**



Palling J. BMJ 2003; 327:745

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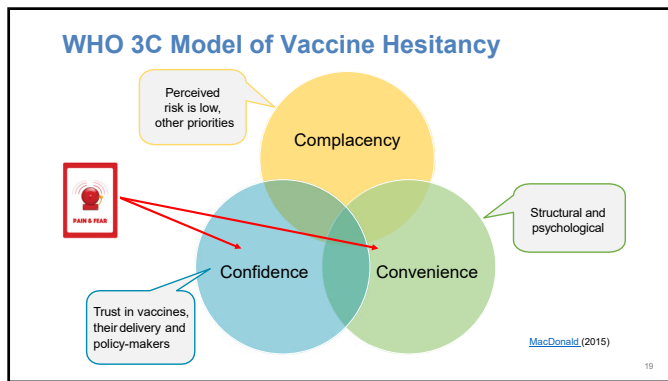
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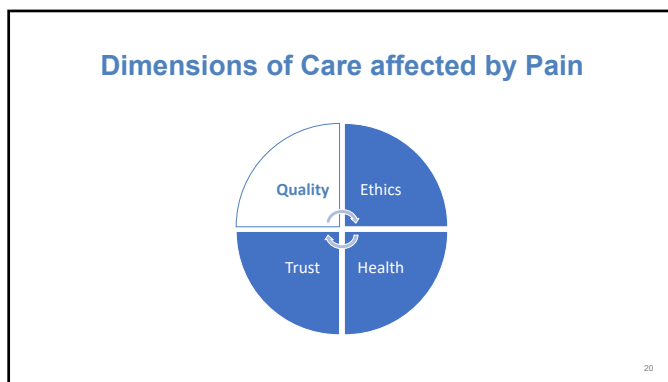
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### Quality Care

#### 1. Evidence-based Clinical Practice Guidelines

**HELP**  
Eliminate Pain  
Kids Adults

In 2015, we created a Canadian clinical practice guideline (CPG) – it has been incorporated into the Canadian Immunization Guide and adopted by the World Health Organization.

The CPG includes evidence-based recommendations for reducing pain, fear and fainting. There are 5 domains of recommendations (5Ps):

Procedural

Physical

Pharmacologic

Psychological

Process

Toddio, McMurtry et al. (2015)  
Selected icons made by Euzébie, from [www.flaticon.com](http://www.flaticon.com)

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## Quality Care

### 2. Impact on Clinicians

- Stress-related responses in patients/clients increase provider stress levels
- Clinicians report dissatisfaction with interactions with patients/clients and their job
- Sub-optimal pain management is a performance issue
- Clinicians engage in noncompliance behaviours

Taddio et al., 2009 Clin J Pain;  
Taddio et al., 2019 Paediatr Child Health

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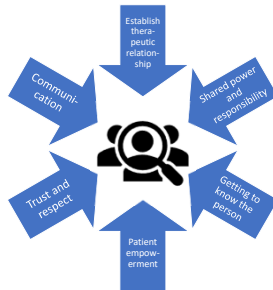
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## Quality Care

### 3. Alignment with Models of Care Delivery



Person-centred care  
Sharma, 2015

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## Some problems with health care delivery

Children are not involved as much as they should be:

- Staff *do not* involve child
- Parents *do not* advocate for child
- Children are *not* prepared



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## Dimensions of Care affected by Pain



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## Ethics of Pain Relief – Standards and Guidelines

- Hippocratic Oath ("At first, do no harm")
- United Nations Declaration on the Rights of the Child (1989)
- Child-Friendly-Healthcare-Initiative (WHO/Unicef)  
(Southall et al. 2000; Pediatrics. 106 1054-1064)
  - Std 6: "standards and guidelines for the assessment and control of pain and discomfort"
  - Std 7: "invasive procedures must be accompanied by adequate analgesia..."
- Pain relief - a basic human right  
(Brennan et al. Pain Medicine. 2007;105 205-221  
IASP 2010 "Declaration of Montreal")
- WHO position statements  
(2015 [https://apps.who.int/iris/bitstream/handle/10665/242426/WHO9039\\_505-510.PDF](https://apps.who.int/iris/bitstream/handle/10665/242426/WHO9039_505-510.PDF))
  - "Mitigating pain at vaccination should be considered as part of good immunization practice globally"
  - (2007 [http://www.who.int/medicines/areas/quality\\_safety/delphi\\_study\\_pain\\_guidelines.pdf](http://www.who.int/medicines/areas/quality_safety/delphi_study_pain_guidelines.pdf))
  - Correct diagnosis and proper treatment of pain is an important public health concern
  - Millions suffer because... ignorance of doctors and lack of a standardized approach

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## Mitigating pain is part of good immunization practices and should be embedded in national immunization policies and practices



4. Advice for national programmes  
Many immunization programmes have sustained high vaccine coverage levels without addressing pain during the vaccination procedure; however, mitigating pain at vaccination should be considered as part of good immunization practice globally.

National programmes should ensure that the recommendations listed above are implemented. At health system level, related health policy should be strengthened by provision of training on the recommended policies and practices. Programmes should recommend the preferred order of injection for country-specific vaccination schedules where possible.

Education of health-care workers on pain mitigation strategies, e.g. by inclusion in training curricula, needs to be ensured in order to facilitate their implementation. Additionally, it should be ensured that caregivers and, if appropriate, vaccine recipients, are educated on vaccination pain mitigation strategies. Information could be provided during prenatal visits, breastfeeding education, or at time of vaccination. Content-specific educational methods to be utilized should include teaching of individuals or groups, or provision of written information.

WHO (2015) Weekly epidemiologic report

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## 2. Implementing best evidence



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## Targets for practice change (Call-to-action)



### 1. Policy makers

- Incorporate evidence in practice standards (e.g., Canadian Immunization Guide)
- Enforce practice standards using policies/procedures
- Disseminate resources/toolkits (tailored to context)



### 2. Clinicians/Providers

- National training/curriculum, certification
- Routine monitoring (e.g., fainting as a reportable Adverse Event Following Immunization)



### 3. Individuals/Clients

- Training/curriculum (e.g., hospital, school)
- Resources/tools (e.g., national PSA, websites)
- Routine feedback (e.g., patient symptoms, experience)

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## The CARD framework

- Targets all stakeholders involved in vaccination.
- Translates the 5P's of pain management into a user-friendly tool.
- Each stakeholder can 'play their CARDS' to improve the vaccination experience.



[Taddio et al. \(2019\)](#)

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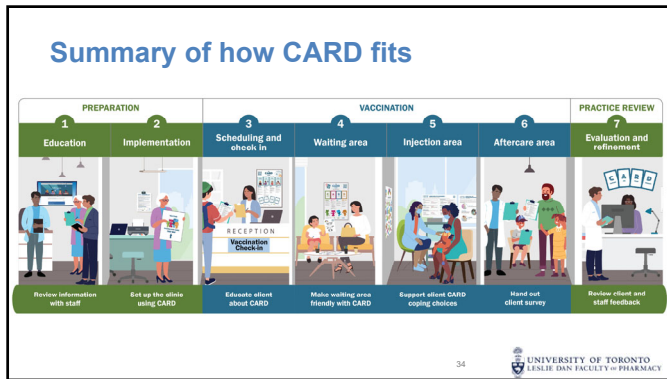
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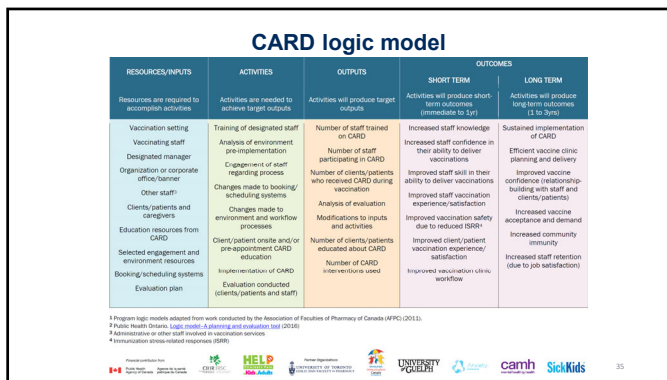
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[https://immunize.ca/  
card-game-kids](https://immunize.ca/card-game-kids)

## Child participation

**TELL US HOW YOU FEEL!**  
For kids ages 5 to 12 years old

Put an arrow on each card pointing to an area you think is really important to you. You can use more than one arrow. We'll use your arrows to learn what we should do to make sure you get the most out of your COVID-19 vaccine.

Put a number from 1 to 5, where 1 is no good at all and 5 is the most good possible.

1 2 3 4 5

1. Tell us how you feel about the vaccine.

2. Tell us how you feel about the vaccine.

3. Tell us how you feel about the vaccine.

4. Tell us how you feel about the vaccine.

5. Tell us how you feel about the vaccine.

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### CARD improves:




Attitudes



Knowledge



Safety



Experiences

[Taddio et al. \(2019\)](#)  
[Taddio et al. \(2022\)](#)  
[Tetui et al. \(2022\)](#)  
[Taddio et al. \(2022\)](#)

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### Studies with CARD

Study	Target	Setting	Design	Sample size	Impact
<a href="#">Freedman et al. (2019)</a>	Providers, children 12 years, parents, educators	Schools	Controlled Clinical Trial	323	↓ fear, dizziness
<a href="#">Taddio et al. (2022)</a>	Providers, children 12 years, parents, educators	Schools	Randomized Controlled Trial	1919	↓ fear, pain, fainting
<a href="#">Tetui et al. (2022)</a>	Providers, patients ≥12 years	Mass vaccination clinics	Before and After Trial	2488	↓ fear, pain, dizziness
<a href="#">Taddio et al. (2022)</a>	Providers, parents, children 5-11 years	Pharmacies	Before and After Trial	153	↓ fear, pain

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### Feedback about CARD

We were able to make it an enjoyable experience.

Everything was just a little more strategic. It's just building on the skills we already have.

It made a big difference. I don't know why you would go back.

Asking about fear showed you cared, right to the very end.

They have a coping strategy. It's not just about pain, fear, but everyday life.

I love my job and this made it better.

Kids were prepared, confident, and empowered!

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### Case

**Back to Sarah...**

What can you/your organization do differently?

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UNIVERSITY OF TORONTO  
LESLIE DAN FACULTY OF PHARMACY

**Fear / Pain** → **Play your CARDS**

[www.cardsystem.ca](http://www.cardsystem.ca)

[www.immunize.ca](http://www.immunize.ca)

[www.helpkidspain.ca](http://www.helpkidspain.ca)

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