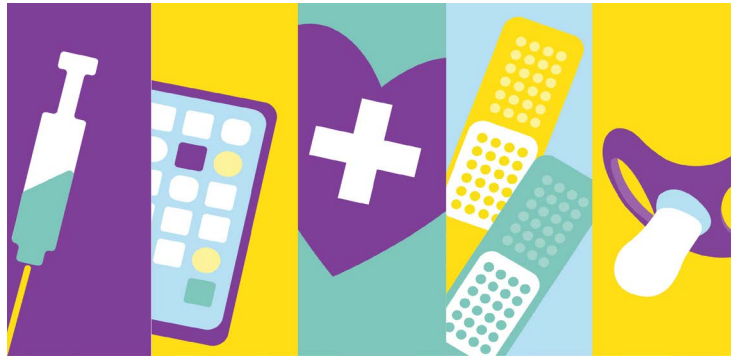




Procedural pain management in children & youth: A toolkit for health professionals

Medical procedures are common. They are amongst the most distressful and painful aspects of medical care for children and youth.

This toolkit shares evidence-based solutions so #ItDoesntHaveToHurt.



**Procedural pain management in children & youth:
A toolkit for health professionals**

Table of Contents

<i>Acknowledgments</i>	<i>Preface</i>	Section 1 Introduction page 8	Section 2 Assessment page 10
Section 3 Procedural Fear page 16	Section 4 Distraction page 20	Section 5 Comfort Positioning page 24	Section 6 Infant Strategies <i>Breastfeeding & Non-nutritive sucking, and Oral Sucrose</i> page 28
Section 7 Topical Anesthetics page 32	Section 8 Pain with Suturing page 36	Section 9 Intranasal Fentanyl page 40	Section 10 Vaccine Related Pain and Fear page 44
Section 11 Procedural Pain and Fear in Neurodiverse Youth page 48	<i>References</i>		

Contributors

This toolkit is a product of the collective expertise of:

Patient and Family Advisors

Raissa Amany, Youth Partner
Erin Fields Ingrouille, Parent/Caregiver Partner
Eureka Liu, Youth Partner
Saffi Sangster, Youth Partner
Karan Singh, Parent/Caregiver Partner

Solutions for Kids in Pain (SKIP)

Kathryn A. Birnie, PhD, RPsych, Associate Scientific Director
Megan MacNeil, MPH, Knowledge Broker, Solutions for Kids in Pain
Sabine Soltani, PhD, RPsych, Postdoctoral Fellow,
University of Calgary

For and in close collaboration with Children's Healthcare Canada as part of the Immunizing Children with Confidence project funded by the Public Health Agency of Canada (PHAC) through the Immunization Partnership Fund (IPF).

Acknowledgements

We would like to acknowledge the important work of the original Canadian Association of Pediatric Health Centres (CAPHC) Pain Community of Practice (CoP). The CAPHC, now known as Children's Healthcare Canada, CoP led the creation of the first version of the Acute Procedural Pain: Paediatric Recommendations and Implementation Toolkit in 2016. The current toolkit builds on this foundational work which has been instrumental in improving pain management for children undergoing painful medical procedures across Canada.

Dr. Samina Ali, MDCM, FRCPC (PEM)
Ashleigh Townley, BSc., MA
Dr. Melissa Chan, MD, FRCPC
Dre. Evelyne Trottier, MD, FRCPC
Kathy Reid RN, MN, NP
Geri St. Jean, RN
Dr. Naveen Poonai, MSc., MD, FRCPC
Elana Jackson, MA, CCLS, RECE
Dr. Denise Harrison, RN, PhD

In addition, SKIP would like to thank the following individuals for their thoughtful contributions:

Solutions for Kids in Pain Hub Leads, Knowledge Brokers, and Admin Centre
Children's Healthcare Canada team members
Pamela Nagy, Parent/Caregiver Partner and Public Health Nurse
Immunizing Children with Confidence (ICC) Advisory Committee
Kari Tiffin, Bright by Design Graphic Design

This toolkit was updated in March 2024 through a financial contribution from the Public Health Agency of Canada (PHAC) through the Immunization Partnership Fund (IPF).

We would like to acknowledge the following individuals for their contributions to this revised version:

Patient and Family Advisors

Rachel Barrett, Parent/Caregiver Partner
Monica Harrison, Youth Partner

Solutions for Kids in Pain (SKIP)

Kathryn A. Birnie, PhD., RPsych, Associate Scientific Director
Louise Tunnah, PhD., Manager – Programs and Impact
Megan R. Ridgway, MSc., Project Coordinator

Subject Matter Experts

C. Meghan McMurtry, PhD, C.Psych, Associate Professor, University of Guelph; Pediatric Chronic Pain Program, McMaster Children's Hospital
Olivia Dobson, BSc., MA



“I think as parents a lot of times, we want to advocate for our kids, but we don’t want to be a burden to the health system. I know a lot of parents worry about this. I want other parents to understand that managing pain is important to your child’s development and physical and mental health... you are not being bothersome. You are doing this for their wellbeing. Advocating for pain management is important... there is science behind it.”

~ Erin, parent partner



Preface

The purpose of this toolkit is to guide health professionals in integrating evidence-based solutions for procedural pain assessment and management in children and youth.

About Solutions for Kids in Pain

[Solutions for Kids in Pain \(SKIP\)](#) is a knowledge mobilization network funded by the Networks of Centres of Excellence (NCE), based at Dalhousie University, and co-led by Children's Healthcare Canada. SKIP seeks to bridge the gap between current treatment practices and available evidence-based solutions for children's pain in Canadian health institutions. SKIP brings together Canada's world-renowned pediatric pain research community, front-line knowledge user organizations, and patients and caregivers. SKIP capitalizes on the engagement of its 6 hubs (IWK Health Centre, SickKids, Stollery Children's Hospital, Children's Healthcare Canada, CHU Sainte-Justine, University of Calgary), over 100 partners, and patients and caregivers to collaborate and co-produce interconnected knowledge mobilization activities.

Purpose and Scope

The purpose of this toolkit is to guide health professionals in integrating evidence-based solutions for procedural pain assessment and management in children and youth. The information and resources contained in this toolkit can be integrated into clinical practice, to support clinical education, and inform organizational policies. The clinical resources contained in this toolkit will be helpful for health professionals, as well as the patients and families with whom they work. This toolkit was guided by the best available scientific evidence and resources at the time of development. The published evidence used to inform this toolkit can be found in the bibliography.

Patient Partnerships

This toolkit was developed in partnership with youth and parents/caregivers with lived experience across the country. This team contributed to the toolkit’s content and design, shared their stories, perspectives, knowledge, and ideas.

Their feedback informed how content was presented, identifying current gaps in knowledge and resources, and ensured a patient-oriented lens throughout.

Access to timely and effective pain management is a fundamental human right and is an essential component of child and family health and well-being. Systemic racism, discrimination, and bias have a grave impact on our healthcare system including driving pervasive and structural health inequities. These health inequities include barriers to accessing timely, equitable, and evidence-based pain management. Effective pain management begins with proper pain assessment.

Accordingly, the [assessment section](#) of this toolkit addresses considerations specific to certain equity-seeking groups. Working with youth and parents to co-develop this toolkit, including representation from equity-seeking groups, reflects a commitment to a patient-centered approach to procedural pain management and striving towards improving health equity for all children and families in Canada.





Introduction

The consequences of poorly managed pain and distress from procedures can be negative and long-lasting, including as a source of medical trauma.

Introduction to Procedural Pain

Children frequently undergo painful medical procedures as part of diagnosis or treatment. Hospitalized children experience up to six acutely painful medical procedures every 24 hours, and most of these are done without any pain management. Infants admitted to a neonatal intensive care unit undergo up to 14 acutely painful medical procedures a day. Medical procedures are often reported to be the most distressing aspects of medical care for children, youth, and their families. The experience of pain for a child is complex and is usually accompanied by anxiety, fear, and behavioural changes. Furthermore, the consequences of poorly managed pain and distress from procedures can be negative and long-lasting, including as a source of medical trauma.

Despite significant research efforts to improve pain management for children, evidence indicates that strategies to prevent or manage pain from medical procedures are not being utilized effectively.

The first national health standard for quality and equitable pediatric pain management was published in 2023 and developed in partnership between SKIP and the Health Standards Organization. This national health standard identified preventable, untreated, and unmanaged pain, such as that from medical procedures, as patient safety incidents. Recognizing procedural pain as a patient safety incident helps to identify obstacles to proper management and facilitate adherence to best practices. Furthermore, the standard recommends the development and implementation of individualized, multimodal pain management plans (i.e., integrating pharmacological, psychological, and physical strategies).

This toolkit is intended to summarize the current best evidence and resources to prevent and manage pediatric procedural pain.

Procedural pain in this toolkit refers to pain associated with medical procedures

(e.g., venipuncture, intravenous line insertion, blood draws, heel lances, lumbar punctures, urethral catheterizations, wound repair, needlesticks for vaccination or medication administration, medical imaging of fractures and dislocations).

Empowering children, youth, and their families to actively participate in the pain management process is a critical aspect of quality pain management.

Health professionals should prioritize the use of minimally invasive techniques whenever feasible, and when a painful procedure is unavoidable, a multimodal approach should be utilized to enhance patient and family experience, as well as procedural success. It is important to note that combining these strategies has been shown to be more effective than using one approach alone. Procedural pain management should be individualized to each child's unique needs, abilities, preferences, and values, and evaluated for efficacy using age-appropriate pain assessment tools. By implementing these strategies, health professionals can deliver comprehensive pain management that maximizes comfort and health outcomes.

Key Standards, Organizations, and Resources that Promote Quality Multimodal Procedure Pain Management

The following resources complement those listed in each section of the toolkit:

Managing pain and distress in children undergoing brief diagnostic and therapeutic procedures

This Canadian Paediatric Society position statement provides guidance to health professionals for managing procedural pain and distress.

[Visit website](#)

Solutions for Kids in Pain (SKIP)

A national knowledge mobilization network seeking to bridge the gap between current treatment practices and available evidence-based solutions. In collaboration with patient partners and organizational partners, produces and promotes evidence-based tools and resources to improve children's pain management.

[Visit website](#)

Translating Emergency Knowledge for Kids (TREKK)

TREKK provides key resources and bottom line recommendations to improve emergency care for children, including topics on procedural pain management.

[Visit website](#)

Toux doux, CHU Sainte Justine provides a summary on procedural pain and distress management for health professionals

[View Website](#)

Meg Foundation

Provides children, youth, parents, and caregivers with science-backed resources to help manage pain experiences. They provide health professionals with a toolkit for improving procedural pain management.

[Visit website](#)

ChildKind International

A nonprofit organization whose mission is to improve the quality of pediatric pain care around the world.

[Visit website](#)

SickKids Online Paediatric Pain Curriculum

Includes modules targeted towards health professionals and trainees. The web-based modules are freely available and include topics on acute and chronic pain management, management of pain in palliative care, the ethics and management of pain in children, pharmacological and non-pharmacological therapies and more.

[Visit website](#)

The CARD™ System

CARD™ is an evidence-based framework that provides strategies that can be used to help cope before and during vaccination and needle procedures.

[Visit website](#)

Suggested Citation (APA Citation Style):

Solutions for Kids in Pain. (2024, March 31). Procedural pain management in children & youth: A toolkit for health professionals XXp. <https://www.childrenshealthcarecanada.ca/en/networks-and-hubs/pediatric-pain.aspx>.

Assessment

The effective treatment of pain, regardless of cause, starts with a proper assessment of pain.

Overview

This section of the toolkit focuses on pain assessment – a critical first step in informing appropriate interventions for managing acute procedural pain in children and youth.

The effective treatment of pain, regardless of cause, starts with a proper pain assessment. Comprehensive assessment involves querying aspects of pain including location, quality, duration, and intensity using developmentally appropriate language and tools.

Pain, at its core, is an internal, personal, and subjective experience; therefore, asking the child about their own pain (self-report) is the recommended approach whenever possible. There are a range of tools available to help assess pain in this way. Examples include the 11-point Numerical Rating Scale, Visual Analogue Scale, Faces Pain Scale-Revised, and pain charts (e.g., body maps). These tools are widely available, easy to use, and evidence based.

Health professionals can also ask parents/caregivers to report on their child's pain (observer report). Although parents/caregivers can provide helpful information about their child's pain, there can be discrepancies between what parents report and what children report in terms of their pain. While health professionals sometimes infer pain through observation of a child, their report of the child's pain often also differs from that of the child themselves.

“Sometimes, when I am experiencing pain, people think I am just anxious. But what I am feeling is pain. It is important to be able to understand the difference.”

~ Eureka, patient partner



Parents and caregivers can be particularly helpful over health professionals as they are more familiar with the child and can better assess whether the child is different from their typical day-to-day behaviours and experience. However, we generally recommend caution in relying solely on observer reports of children's pain and using this information as just one piece of the pain puzzle.

For infants, younger children, or for those who are unable to verbally report their pain, pain can be assessed using behavioural indicators (e.g., facial expressions such as grimacing, crying, sleep disturbance, and reductions in feeding and activity). Behavioural rating scales can be used to help with behavioural observation and assessing pain in this way.

Finally, pain assessment doesn't just occur at one point in time. Effective pain management involves monitoring and reassessing pain (e.g., before, during, and after medical procedure) to track changes in pain over time, and to determine the effectiveness of any treatment.

Pain Assessment in Equity Seeking Populations

Comprehensive pain assessment considers how aspects of diversity including language, culture, ethnicity, age, sex, gender, ability, social context, socioeconomic status, and/or education play a role in the experience and expression of pain. Each of these factors can intersect with one another and can also interact with the biases, assumptions, and beliefs of the pain assessor (often the health professional). While not an exhaustive list by any means, a few important equity-seeking groups are considered below.

Indigenous Children and Youth

Research on the experience of pain has found cultural differences in how pain is expressed. For example, in certain Indigenous cultures, such as the First Nation Mi'kmaq community, an emphasis on stoicism and strength may result in youth exhibiting muted pain expressions or hiding their pain from others. Thus, these youth may not exhibit pain behaviours that health professionals typically expect when assessing pain (e.g., crying and grimacing). Health professionals assessing pain in youth from these cultural groups may benefit from creating additional space, building rapport, showing respect, and allowing youth to speak of their pain using their own words and their own story. It should be noted that the majority of research examining the expression and experience of pain in Indigenous communities in Canada has been conducted in Atlantic Canada with the First Nation Mi'kmaq community. As such,

Your Approach Matters

The resources identified in this section are useful tools for pain assessment; however, they are just one piece of comprehensive pain assessment. These tools are intended to support and strengthen the overall clinical encounter and pain assessment process.

Another important piece is found in the interaction between health professionals, their patients, and patients' families. A compassionate approach on the part of the health professional can go a long way in reducing distress and facilitating clear communication and better care.

This can include taking the time to build rapport and trust and finding ways to empower your patients and their parents/caregivers. Presenting to an emergency department or requiring acute medical procedures can be a very stressful and often scary time for children and families. In some cases, these children and families may have a history of traumatic or difficult experiences that can influence their current experience. Adopting a trauma-informed approach can improve the patient experience, enhance the clinical encounter, and improve outcomes.

Consider how might pain assessment be similar or different for newcomers to Canada (e.g., immigrants, refugees)?

these recommendations and findings may not necessarily generalize to other Indigenous communities or even all individuals within this specific community. There has been some additional research that has focused on developing a culturally appropriate pain assessment scale adapted to Inuit language and culture; however, much work remains to be done.

Black Children and Youth

A longstanding history of racism, discrimination, structural inequities, and injustices perpetrated by the medical system have fueled a justified mistrust of this system by Black individuals. Moreover, research on racism in pain has found that false and damaging beliefs, such as the idea that Black people have thicker skin and therefore feel less pain, continue to be accepted even among medical trainees to this very day. As a consequence, Black people are more likely to have their pain underestimated by health professionals. This historical and current context is a critical point of consideration for health professionals when assessing pain and facilitating equitable pain assessment and treatment for Black children and youth.

Children and Youth Who Cannot Communicate Verbally

It is important to consider child development, language, and communicative ability when engaging in pain assessment. Although using self-report is recommended wherever possible, these measures do require a certain level of cognitive, language, and developmental ability.

Nevertheless, for children/youth with communication and/or developmental disabilities, it should not be assumed that self-report of pain is not possible. Modifications to pain assessment may include adapting/simplifying standard measures of pain intensity to be more developmentally appropriate. Self-reporting pain may involve a simple yes/no, other vocalizations, gestures, or signals (e.g., eye gaze shifts or blinks). Self-report may also be integrated with observer reports, such as those provided by caregivers, as well as behavioural observation.

“It is important to remember that pain can feel different from day to day. You can have the same needle every day but based on how your day is going, did you get enough sleep, or did you eat breakfast, it will feel different. And that is okay.”

~ Erin, parent partner

Section 2: Assessment

Health Professional Resources

Best Practices in Pain Assessment and Management for Children

This Canadian Paediatric Society position statement provides guidance to health professionals for pain assessment and management.

Canadian Paediatric Society

[View article](#)

Clinical Best Practice Guidelines: Assessment and Management of Pain

Describes clinical best practice guidelines for the assessment and management of pain.

Registered Nurses' Association of Ontario

[View PDF](#)

The Recognition and Assessment of Acute Pain in Children

Describes clinical practice guidelines for the assessment of acute pain in children.

Royal College of Nursing

[View PDF](#)

Pain Assessment Tools

PÉDIADOL La douleur de l'enfant

Pédiadol is a francophone group of fieldwork experts consisting of doctors, nurses, childcare attendants and psychologists involved in improving children's pain management. The platform organizes an annual conference on pediatric pain management and produces training, tools and resources for health care professionals and families.

Societe Savante pour le Traitement de la douleur chez l'enfant

[Visit website](#)

Numerical Rating Scale (NRS)

The NRS is a widely used self-report tool that measures pain intensity on an 11-point numerical scale ranging from 0 ("no pain") to 10 ("Worst pain imaginable") and can be used in children 6 years of age and older.

[View PDF](#)

Faces Pain Scale – Revised

The Faces Pain Scale – Revised is a widely used and easy to administer self-report scale to assess pain in children aged 4 and older. It is available in over 40 languages and the instructions and copies of the measure are free to download.

[Visit website](#)

Northern Pain Scale

The Northern Pain Scale (NorthPS) is a pain scale that has been adapted to Inuit language and culture and has been used in the assessment of pain in both children and adults.

[View article](#)

Visual Analog Scale

The Visual Analog Scale is another widely used self-report measure to assess pain in children. It is recommended for use with individuals aged 7 to adulthood. The PDF document linked to below includes a copy of the scale and instructions for use.

[View PDF](#)

FLACC Scale

The FLACC Scale is an observational scale that can be used to aid in assessment of pain using behavioural observation. It is available in multiple languages, and it is recommended for use in children aged 2 months to 7 years of age.

[View PDF](#)

EVENDOL Scale

The EVENDOL scale is an observational scale that can be used to aid in assessment of pain using behavioural observation. It is available in multiple languages, and it is recommended for use in children from birth to 7 years of age.

[View PDF](#)

Neonatal Infant Pain Scale

The NIPS is a scale that can be used to assess procedural pain in newborns and infants (aged 0-1 month). It includes physiological, behavioural, and contextual indicators.

[View PDF](#)

Pain Charts

Pain charts (body maps or manikins) can be used in the assessment of pain location. This article provides an overview of the use of pain charts in eliciting information about the location of pain symptoms from children and adolescents.

[View article](#)

The Kids Hurt App

Here you can find an introduction to and overview of The Kids Hurt App – an app that is currently in development by the Aboriginal Children’s Hurt & Healing (ACCH) initiative and is intended to facilitate a more interactive and culturally-relevant way of measuring pain with Indigenous youth.

[Visit website](#) (The Kids Hurt App)

[Visit website](#) (Aboriginal Children’s Hurt & Healing (ACCH) initiative)

Training Materials

When Owies Need More than a Band-aid... Managing Pain in the Emergency Department

Created by Geri St. Jean (R.N, B.Sc.N. Clinical Nurse Educator, University of Alberta), Hospital and Stollery Children’s Hospital Emergency Department.

Additional acknowledgements: *CAPHC*

This clinical PowerPoint was developed to support education on using pain assessment techniques and tools, including case studies of interventions based on real-life examples from the emergency department.

[View PDF](#)

Other

Trauma-Informed Care: Implementation Resource Center

This website provides an introduction to trauma-informed care along with resources on this topic for health professionals.

[Visit website](#)

Smartphone Apps for Tracking Pain

There are a range of apps available to help with tracking and assessing pain (both chronic and acute). While a review of these apps is beyond the scope of this toolkit, you can read more about them in the paper linked below. At the time of its publication, there were no apps available that were designed specifically for use in pediatric patients. Since then, an app for pediatric patients has been developed, called iCanCope.

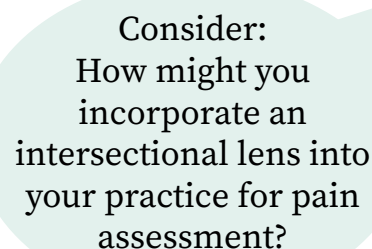
[View PDF](#)

iCanCope

This smartphone app was developed as a pain education and self-management platform for children and adults experiencing acute and chronic pain. It includes the ability to assess and track pain symptoms in real-time. This app was developed in collaboration with the Hospital for Sick Children and the Centre for Global eHealth Innovation. An additional app called iCanCope Postop is in development and is specifically designed to help children and adolescents track and self-manage postoperative pain.

[View website](#) (iCanCope)

[View article](#) (iCanCope Postop)



Consider:
How might you incorporate an intersectional lens into your practice for pain assessment?

**“I think it is important to
remember that pain doesn’t
look the same on everyone.”**

~ Saffi, patient partner



Procedural Fear

Taking care to manage children's fear and anxiety early on can set the stage for making future medical procedures easier.

Overview

This toolkit section focuses on managing fear and anxiety related to medical procedures.

Fears of medical procedures (for example, getting vaccinations or blood draws) are common in children. Medical procedures like this are also common in childhood, and how pain and anxiety are managed can have long-term consequences. For example, fears of medical procedures in childhood can last a lifetime and result in avoidance and delays in accessing necessary healthcare as children age and become adults. Taking care to manage children's fear and anxiety early on can set the stage for making future medical procedures easier and increase children's comfort and adaptive coping.

Helping reduce fear of medical procedures can begin with an open and honest conversation and creating space for children to feel heard, understood, and validated in their feelings. It helps if children can feel some sense of control over the situation. This can involve providing them with what to expect and, whenever possible, giving them choices to help them feel in control. These techniques can be helpful for children who experience low to moderate levels of fear. Being evasive, holding a child down, or forcing a medical procedure is not recommended and can have significant adverse and long-term consequences. Strategies such as [comfort positioning](#) and [distraction](#) can help to reduce procedural fear. In cases of high procedural fear, consider if procedural sedation or pharmaceutical supports are an option in combination with other strategies.

It was always helpful to us when clinicians used calming words: 'we are going to make you as comfortable as possible during the procedure' helps to make the child and the parents feel calm."

~ Karan, parent partner

For children with high levels of fear, more focused and intensive treatment may be required. Exposure-based therapy is a psychological therapy that involves facing your fears gradually (moving from easier to more difficult situations). It is a first line recommended therapy approach for managing specific fears and phobias, including fears related to medical procedures (e.g., needle fear). Certified Child Life Specialists can help children manage their pain and anxiety during procedures. By supporting the child during the procedure, they allow caregivers to remain beside the child or can teach caregivers different [comfort positions](#).

In addition, the Child Life Specialist can explain the procedure to the child and caregiver, and they will use positive reinforcement and supportive language.

These strategies for managing fear and anxiety can be used with other recommended pain management techniques, as outlined in other sections of this toolkit. Remember, different techniques work for different children. Speak to the child and the caregiver to learn what has worked well for them.

Strategies such as comfort positioning and distraction can help to reduce procedural fear.



Section 3: Procedural Fear Health Professional Resources

Managing Procedural Anxiety in Children

IASP Pain Research Forum

A video demonstrating approaches to interacting with children to minimize anxiety and maximize cooperation.

[Watch Video](#)

Child Life Specialists can help children manage their pain and anxiety during procedures

Solutions for Kids in Pain

A pain fact sheet of the support that Child Life Specialists can offer during medical procedures.

[View PDF](#)

Family/Patient Resources

If your child is afraid of - or refusing - a medical procedure, here's how to help

Conversation Canada

This article provides recommendations for parents on what to do when their child experiences fears of medical procedures.

[Visit Website](#)

Teddy Bear Hospital 2022: Fiona Bear Gets an X-Ray and Ultrasound

The Museum of Healthcare

This video explains what happens during an x-ray and ultrasound.

[Watch Video](#)

Teddy Bear Hospital 2022: Teddy Gets a check-up

The Museum of Healthcare

This video explains to your children what happens during a visit to the doctor.

[Watch Video](#)

Supporting your child through a brief medical procedure

Toux Doux, CHU Sainte Justine

Summary for parents to reduce fear and stress during their child and youth procedures.

[View PDF](#)

Supporting your child through a brief medical procedure

Caring for Kids

Guide for parents on how to reduce fear and stress related to procedures.

[Visit Website](#)

L'accompagnement procédural pour maximiser la réduction de la peur et de la douleur chez les enfants

CHU Sainte-Justine

A mother and Certified Child Life Specialist discuss the experience of little Noah during his visit to the ED for an IV.

[Watch Video](#)

Book Recommendations for Procedural Fear (Ages 5-8 years old)

You Are So Brave!: Ellie and Leo Go to the Doctor

Authors: Anne Kim, Ioana Moldovan, Karen Jacobs

Ellie is vaccinated: A story about getting the COVID-19 vaccine

Authors: Chen sisters

It's Time For Your Checkup: What to expect when going to a doctor visit

Author: Shani Thornton

Betty's Blood Test

Author: Wendy J. Hall

“My daughter understandably has a lot of fear when it comes to her regular, painful medical procedures. I have learned that it is always best to be truthful with her and prepare her for it rather than spring it on her. Some of the ways we prepare are; talking it through, playing, and looking at her photo book. The book is full of pictures of her medical journey. Playing with her dolls and pretending to play doctor has really helped her process what she has been through and gives her confidence to get through the next procedure.”

~ Erin, parent partner

Distraction

Distraction techniques are effective in reducing pain and distress related to needle procedures and laceration repairs.

Overview

This section of the toolkit focuses on how distraction can be used to help manage and reduce acute procedural pain in children.

Distraction techniques are effective in reducing pain and distress related to needle procedures and laceration repairs. They are an important part of managing [vaccine-related pain and fear](#). Distraction techniques can involve simple techniques such as bubbles, music, or deep breathing or can involve technology-based interventions such as games or videos on a smartphone or virtual reality.

The current best evidence supports distraction techniques for children aged 2 and older. There are a wide range of distraction techniques and strategies available for children and youth, and it's important to consider the developmental and age appropriateness of techniques used. For example, blowing bubbles, reading a story, or playing an interactive game may be very effective distraction techniques for younger children. For older youth, it's especially important to find ways to empower them in their own care. This can involve asking them about their preferred distraction techniques, presenting them with a few options and allowing them to choose what they prefer, and/or engaging in conversation with them that is unrelated to their procedure.

Not all strategies will work for all children and youth, and it's okay to try different techniques, rather than forcing a strategy that is not working well.

The current best evidence supports distraction techniques for children ages 2 to 18 years; however, using age-appropriate techniques for children 0-2 years of age would likely confer some benefit and minimal harm.

“Last time I was at the hospital for surgery, a light tower was in my room. That was calming and gave me something to focus on. It helped me to take deep breaths while I waited for my surgery to start.”

Health professionals can work collaboratively with parents and children to identify techniques that may work best for each child. Caregivers can be helpful in terms of identifying effective distraction techniques and even bringing items from home. Distraction techniques may need to be tailored and individualized for each child/family as appropriate, and ideally, can be implemented in a way that minimizes interference with the medical procedure that is required. If available, certified child life specialists can help both ahead of and during procedures.

Effective strategies do not need to be costly, time-consuming or require extensive training.

Distraction, like many of the strategies for pain management discussed in this toolkit, can be combined with other evidence-based approaches to manage pain, [reduce fear and anxiety](#), and optimize coping skills during a painful procedure. For example, [infant distraction](#) can be used with oral sucrose, breastfeeding, positioning and non-nutritive sucking, and in conjunction with pharmacological pain management.

“One thing that was helpful for our daughter when undergoing treatments was her bravery necklace that the hospital gave her. Every time she underwent a painful procedure, she could tie a bead onto her necklace. It helped distract her, but it also helped her see that she was braver and braver each day.

~ Karan, parent partner



Section 4: Distraction

Health Professional Resources

Managing pain and distress in children undergoing brief diagnostic and therapeutic procedures

A position statement from the Canadian Pediatric Society on procedural pain in children. Includes an overview of distraction as a psychological pain management technique as well as ideas for both younger and older children.

[Visit website](#)

Bottom Line Recommendations: Procedural Pain

A summary of the management of pediatric procedural pain, including physical and psychological distraction techniques. Includes a brief description of distraction as a psychological pain management technique.

Translating Emergency Knowledge for Kids (TREKK)

[View PDF](#)

Tip Sheet: Coping Strategies for Painful Procedures

Provides an overview of various distraction techniques and makes recommendations for the use of specific techniques based on age.

Children's Healthcare Canada (formerly CAPHC)

[View PDF](#)

Improving Environment to Reduce Fear

Ideas to improve the environment to reduce distress and serve as a distraction tool.

Toux doux, CHU Sainte Justine

[Visit Website](#)

[Watch Video](#)

Lancement EAU 2023 – Salle 18 de l'urgence

Toux doux, CHU Sainte-Justine

This video shows how improvement of the environment in a procedure room to help with distraction for children and youth needing exams.

[Watch Video](#)

Lancement Toux doux 2023 – Projet en hydrothérapie

Toux doux, CHU Sainte-Justine

This video highlights how improvement in the environment for children undergoing hydrotherapy aids in distraction.

[Watch Video](#)

How to Use Buzzy® Distraction Device in a Clinical Setting

Provides an example of a Health Canada approved cold and vibrating device that can have a positive effect on pain reduction when used just before a needle poke. This resource is a comprehensive PDF of a presentation slide deck on this topic.

[View PDF](#)

Utilisation du dispositif Buzzy^{MD}

Buzzy® is a small vibrating bee with ice-pack wings that helps block pain when giving injections or other medical procedures.

Pediadol

[View PDF](#)

Create your distraction box

Ideas and suggestions of use of each tool proposed.

Toux doux, CHU Sainte Justine

[Visit Website](#)

Family/Patient Resources

The Use of Humor to Reduce Pediatric Pain

Tip sheet on using humour as a distraction technique for managing acute procedural pain.

Children's Healthcare Canada (formerly CAPHC)

[View PDF](#)

Distraction in Action Tool (DAT)

The Distraction in Action Tool (DAT) is a web-based tool that can help identify your child's risk for distress (DistrEstimate) and provide you with instructions based on your individual child.

The University of Iowa

[Visit website](#)

Distraction in Action - Helping Your Child During Medical Procedures

This video describes how caregivers can help distract children during painful procedures. It was filmed with real patients and parents.

University of Iowa Stead Family Children's Hospital with support from the Mayday Fund

[Watch video](#)

How To Manage Pain During Medical Procedures: You are the Boss of Your Brain

This video teaches children and caregivers about how pain works and techniques to distract your brain during pain.

Stanford Medicine Children's Health – Lucille Packard Children's Hospital

[Watch video](#)

Distraction during procedures

Distraction ideas for parents and caregivers.

Children's Hospital of Eastern Ontario

[Visit website](#)

Distraction ideas

This webpage includes a section called “Distraction Ideas”, which provides a list of distraction ideas grouped by child age, ranging from infants to adolescents.

The Royal Children's Hospital Melbourne

[Visit website](#)

Training Materials

Procedural Distraction 101 for Staff

Created by Breanne Mathers (Child Life Specialist) and Nick Joachimides (Manager, Patient Safety) at Holland Bloorview Kids Rehabilitation Hospital.

Canadian Association of Paediatric Health Centres

[View PDF](#)

Piqûres sans blessure - Video voie veineuse en pédiatrie

CHU Sainte-Justine

[Watch video](#)

Pour des soins en douceur - Capsules d'information et de prevention (Video)

Toux doux, CHU Sainte-Justine

[Visit website](#)

“Get to know what works best for your child but understand that can change. For a while, when the nurses would come in for a procedure, as parents, we would set up her favourite cartoon and ask them to wait 5 minutes so she could get settled watching her show. But then that no longer kept her attention, so we switched to shorter videos on YouTube, which worked well.”

~ Karan, parent partner

Distraction toolkit ideas

Build a comfort kit!

Toddlers/Preschool Age

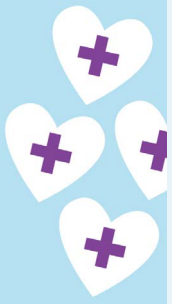
- Bubbles
- Textured balls
- Glitter wand
- Rain stick
- Stickers
- Light up or spinning toys
- Looking at pictures books
- Listening to music, watching a show or playing a game on an iPad/Smartphone

School Age

- “I Spy” books or pages
- Playdoh
- Kaleidoscope
- Deep Breathing
- Tapping fingers
- Telling jokes
- 20 Questions Game
- Listening to music, watching a show or playing a game on an iPad/Smartphone

Youth

- Stress ball
- Distraction cards
- Drawing board (Buddha Board, Etch-a-sketch or magnetic board)
- Relaxation techniques
- Conversation starters – “Tell me about....”
- Listening to music, watching a show or playing a game on an iPad/Smartphone or VR



Comfort Positioning

Holding a child in a secure, hugging, comfort position can help them feel safe and more in control during medical procedures.

Overview

This toolkit section focuses on how comfort positioning can be used to help reduce pain, distress, and discomfort in children.

This toolkit section focuses on how comfort positioning can be used to help reduce pain, distress, and discomfort in children.

Holding a child in a secure, hugging, comfort position can help them feel safe and more in control during medical procedures such as immunization and IV insertion. The current best evidence supports health professionals partnering with parents and caregivers to help reduce a child's anxiety during a procedure. Parents and caregivers should always be encouraged to be present during procedures while also considering caregiver preferences. This can help the child feel safe and prevent anyone from being injured during the procedure.

There are lots of different positions for comfort that children and caregivers can try. Children of all ages can benefit from different types of comfort positions. Younger children may want to sit on a parent or caregiver's lap. 'Hugging' holds can provide comforting but secure support. For older children and teens, comfort positioning can involve sitting upright and having a trusted person or parent sitting next to them. For children of all ages, evidence shows that remaining upright, instead of the traditional approach of lying on a bed while restrained, increases comfort and a child's sense of control during painful medical procedures.

“Having posters displaying comfort positions in different hospital areas is a great idea. Parents and children can look at them and health professionals can use them to help explain what to do.”

Eureka, patient partner



It's important to distinguish between secure comfort holds that support children and how that differs from restraint. Restraint takes control away from the child and is not a recommended approach. Wherever possible, create space for the child to have some control over what position they are in/would prefer to be in. This may include taking the time to ask them what position helps them feel more comfortable. Finding an effective comfort position should ideally be a collaborative effort between health professionals, children, and their caregivers. As a health professional, you can check in with families throughout the procedure to assess how well the pain management strategies are working.

Comfort positions can be combined with other pain management strategies (e.g., [distraction](#), [topical anesthetics](#), and other strategies aimed at reducing [anxiety or fear](#)) to provide a multi-method, comprehensive pain management approach.

The following resources illustrate what comfort positions can be helpful during different medical procedures. Some of these resources may be helpful for parents and families in preparing for medical procedures. For example, the posters on comfort positioning could be printed out and hung up in a waiting area where families could view them in advance of a medical procedure.

It's important to distinguish between secure comfort holds that support children and how that differs from restraint.

“There is a big difference between needing to hold your child down and using a comfort position. It is a relief to know that many options exist to hold your child safely and comfortably during different procedures.”

Erin, parent partner

Section 5: Comfort Positioning Health Professional Resources

Comfort Positions: positioning for comfort during blood draws and/or immunizations

An overview of comfort positions to increase the comfort of patients, parents, and medical staff during blood draws and immunizations.

BC Children's Hospital

[View PDF](#)

Comfort Positions: positioning for comfort during IV starts

An overview (PDF of presentation slide deck) of comfort positions to increase the comfort of patients, parents, and medical staff during IV starts.

BC Children's Hospital

[View PDF](#)

Positions for Comfort (PFC) Reference Chart

Provides an overview of various positions that caregivers and children can adopt to promote increased comfort and better coping during painful procedures.

Toux doux, CHU Sainte Justine

[View PDF](#)

Comfort Positions Poster

This poster describes different comfort holds and when to use them.

Commitment to Comfort program at Alberta Children's Hospital

[View PDF](#)

Comfort Position adapted to child's age

Posters on comfort positions for children and youth (French; developed by *Toux doux, CHU Sainte Justine*)

[Positionnement pour nourrisson](#)

[Positionnement enfant 1 à 4 ans](#)

[Positionnement enfant 5 à 11 ans](#)

[Positionnement enfant 12 ans et plus](#)

Training Materials

Why and how clinicians can use comfort positions in their practice

Child life specialists discuss how clinicians can use comfort positions to support medical procedures.

C.S. Mott Children's Hospital

[Watch video](#)

Communicating with parents about comfort positions

Child life specialists discuss how clinicians can communicate and demonstrate comfort positions with patients and families.

C.S. Mott Children's Hospital

[Watch video](#)

Family/Patient Resources

Comfort Positions

Learn comfort positions that allow you to calm and comfort your child while keeping them safe! The Meg Foundation has developed printable PDF posters on comfort positioning, available in multiple languages!

Meg Foundation

[Visit website](#)

Resources for Tweens & Teens (12+)

The Meg Foundation website has a whole section of pain resources specifically for older children and teens. This includes information on how to maximize comfort during painful procedures.

[Visit website](#)

Positioning for Procedures

An overview of comfort positions that can be adapted to suit the child or procedure.

Royal Children's Hospital Melbourne

[View PDF](#)

10 Ways to Help Your Children Get Through Challenging Procedures

A poster for parents and caregivers that gives tips for comfort positions and other distraction techniques.

Stollery Children's Hospital

[View PDF](#)

“It is beneficial, when possible, that a procedure isn’t rushed and that the patient has as much control as possible over what position they would like to be in during the procedure. Otherwise, it can be traumatizing to be rushed through but if you talk to patients about what is best for them, that can avoid fear in the future.”

~ Raissa, patient partner



Infant Focused Strategies

Early pain experiences in infancy and early childhood can shape the brain and affect future pain experiences.

Overview

This section of the toolkit focuses on how breastfeeding, non-nutritive sucking, and oral sucrose can be used to manage acute procedural pain in infants (aged 0 to 1 years) and premature babies.

Breastfeeding is a multi-modal pain management technique that offers comfort through skin-to-skin contact, rocking, and sucking. It has been shown to be an effective strategy for reducing pain in infants. Evidence also shows that endogenous opiates (i.e., opiates produced naturally in the body) can be transferred to the infant through breast milk and help with reducing pain and increasing comfort.

Non-nutritive sucking (e.g., using a pacifier) is a simple physical technique that has also been shown to be helpful in pain management and reducing distress. It can easily be integrated with other physical techniques, such as [comfort positions](#), including rocking/holding, skin-to-skin contact or “kangaroo care”, swaddling, and facilitated tucking. While these physical strategies are easy to implement and have been shown to reduce pain and distress, they likely will not eliminate all pain associated with a medical procedure. As such, it is recommended that these strategies be used in combination with pharmacological and other evidence-based strategies for pain management in infants.

Oral sucrose is a pharmacological approach to pain management and is successfully used for venipuncture, intravenous cannulation, lumbar puncture, urinary catheterization, and other common medical procedures. The recommended dose can vary from 0.5 mL to 2 mL of 24% to 33% sucrose. To maximize effectiveness, the first part of the dose of oral sucrose must be given just before the procedure (2 minutes prior). The remaining oral sucrose should be administered during the actual procedure. Evidence shows that oral sucrose is most effective for reducing pain in children under the age of 1 year and can reduce pain scores by approximately 20%. As with the other strategies mentioned in this section, it is most effective when combined with other pain management techniques.

Early pain experiences in infancy and early childhood can shape the brain and affect future pain experiences. As such, timely assessment and early intervention are critically important when it comes to pain in infants.

It may be a good idea to revisit the section of the toolkit that focuses on pain [assessment](#) and familiarize yourself with what to look for when assessing pain in infants. This can then inform timely intervention and pain management. When considering various options for pain management in infants (and older children as well), it is recommended that health professional adopt a least-invasive approach wherever possible (meaning start with the least invasive options and progress from there as required).

Reducing pain in tests and treatments with 24% Sucrose

Oral sucrose:

Give 0.5 mL of 24% glucose solution PO (by mouth) 2 minutes before initiating the painful procedure.

If 24% sucrose is unavailable, dilute D50W with equal parts sterile water to create D25W as a substitute or simply add a packet of sugar (3-5 g) to 10 mL sterile water.



Section 6: Infant Focused Strategies

Health Professional Resources

Managing pain and distress in children undergoing brief diagnostic and therapeutic procedures

This position statement provides guidance to health professionals for managing procedural pain and distress.

Canadian Paediatric Society

[Visit website](#)

Bottom Line Recommendations: Procedural Pain

A summary of the management of pediatric procedural pain, including physical and psychological distraction techniques. Includes oral sucrose dosing and administration instructions.

Translating Emergency Knowledge for Kids (TREKK)

[View PDF](#)

Sucrose 0-6 mois

Clinical practice guideline on sucrose.

Toux doux, CHU Sainte-Justine

[View Website](#)

Prevention and Management of Procedural Pain in the Neonate: An Update

Policy statement from the American Academy of Pediatrics that provides overview of evidence-based recommendations for pain assessment and management in infants.

[View article](#)

Pour des soins en douceur - Capsules d'information et de prévention

Three video capsules for parents on strategies for preventing and reducing pain and distress in children during medical procedures, including one for infants.

CHU Sainte-Justine

[Watch video](#)

Comfort Positioning – Infants

A poster resource outlining various comfort position techniques for infants.

Commitment to Comfort, Alberta Health Services.

[View PDF](#)

Positionnement suggéré pour des soins tout en douceur – pour les nourissons

A poster on comfort positions for infants.

Toux doux, CHU Sainte Justine

[View PDF](#)

Pour les prélèvements chez les 0-12 mois

Video demonstrating how to apply appropriate pain management strategies during blood draws in babies (0-12 months).

Toux doux, CHU Sainte Justine

[Watch video](#)

Family/Patient Resources

L'allaitement et ses bénéfices

Poster resource outlining the benefit of breastfeeding before, during and after procedure.

Toux doux, CHU Sainte Justine

[View PDF](#)

Be Sweet to Babies During Painful Procedures

Watch this short video for an overview of baby-friendly techniques to increase comfort and help reduce pain during bloodwork (or other needle procedures).

Techniques discussed include breastfeeding, kangaroo (skin-to-skin) care, and oral sucrose.

Dr. Denise Harrison, Children's Hospital of Eastern Ontario, CHEO Research Institute, University of Ottawa (English)

[Watch video](#)

The Power of a Parent's Touch in Reducing Baby's Pain During Medical Procedures: It Doesn't Have to Hurt

Watch this short video to learn how researchers have found parents can use breastfeeding and skin-to-skin to help comfort their newborns during painful procedures. This video also describes recommended timing for skin-to-skin contact or kangaroo care.

Dr. Marsha Campbell-Yeo, Centre for Pediatric Pain Research IWK Health Centre and Dalhousie University

[Watch video](#)

What you Need to Know About... Reducing Pain with 24% Sucrose

A pamphlet for parents and caregivers explaining the use of oral sucrose.

Children's Hospital of Eastern Ontario

[View PDF](#)

Kangaroo Care for your Infant

An overview of the importance of Kangaroo care and tips on when and how to use Kangarooing techniques.

Nationwide Children's

[Visit website](#)

Creating Comfort for Babies Infographic

This one-page infographic for parents provides a quick overview of pain management strategies for babies undergoing minor medical procedures, such as needles. This infographic is available in multiple languages.

The Meg Foundation

[Visit website](#)

“Whenever possible, babies need their parents with them during a procedure. Once, my daughter was taken away to put in an IV when they couldn’t get a vein and she screamed. It took me a long time to get the sound of her screaming out of my head.”

~ Erin, parent partner



Topical Anesthetics

A form of pharmacological pain management that can be used to minimize procedural pain and distress for children undergoing skin-breaking procedures.

Overview

This section of the toolkit focuses on the use of topical local anesthetics for pain management. Current best evidence supports the use of these techniques for children aged 0 to 17 years.

Topical anesthetics are a form of pharmacological pain management that can be used to minimize procedural pain and distress for children undergoing skin-breaking procedures, such as venipuncture, IV cannulation, lumbar puncture, and immunizations, and/or have experienced minor injuries, such as lacerations.

Topical anesthetics such as lidocaine can also be used to reduce the pain associated with other procedures such as nasogastric tube insertion.

Topical anesthetics do not appear to be effective during heel lancing procedures – a painful procedure often used to take blood samples in newborns and infants. Refer to the section on [infant specific strategies](#) for additional pain management techniques for this age group.

Topical anesthetics can be combined with other physical and psychological interventions for pain management, such as [distraction](#) and [comfort positioning](#), and can be effectively integrated as part of a comprehensive pain management approach for infants as well as older children and teens. It can be combined well with other strategies specific to managing [immunization related pain and fear](#) and [procedural fear](#) more generally.

“I use a topical anesthetic before some procedures, and I think it should not be underused when appropriate. Unfortunately, as I get older, health professionals offer it less and less, but it is still beneficial, even to teens and young adults.”

Raissa, patient partner

Choosing the appropriate topical anesthetic is important. The Canadian Pediatric Society's position statement on *Managing pain and distress in children undergoing brief diagnostic and therapeutic procedures* provides recommendations for choosing a topical anesthetic and administration guidelines based on the procedure.

Administration guidelines will differ depending on the particular anesthetic and procedure, so this is a useful guideline to refer to. It also gives an overview of advantages, side effects, and contraindications for each type of topical anesthetic described.

Parents may be interested to know that in Canada you can buy topical anesthetics (e.g., numbing creams and patches) without a prescription. They can be purchased at most pharmacies, and application instructions can be discussed with pharmacists at the time of purchase.

“When I arrived for my surgery, the first thing my nurse did was put a numbing cream on both my hands. She told me she didn't know which hand the IV tube would go in, so she wanted to put it on just in case. I really appreciated that because I felt better prepared.”

Petra, patient partner



Section 7: Topical Anesthetics

Health Professional Resources

Managing pain and distress in children undergoing brief diagnostic and therapeutic procedures

Canadian Pediatric Society's position statement on managing pain and distress in children. This document includes a table (Table 1) that outlines recommended topical anesthetics and administration instructions before needle procedures on intact skin.

Canadian Pediatric Society

[Visit website](#)

Peds Case Notes: Managing pain and distress in children undergoing brief diagnostic and therapeutic procedures

A one-page summary of the Canadian Pediatric Society's position statement on managing pain and distress in children. A PDF version of this one-pager can be accessed and downloaded by visiting the website below.

Canadian Pediatric Society

[Visit website](#)

Bottom Line Recommendations: Procedural Pain

A summary of the management of pediatric procedural pain, including physical and psychological distraction techniques. Includes a brief overview of topical anesthetics based on the medical procedure that is being performed.

Translating Emergency Knowledge for Kids (TREKK)

[View PDF](#)

Making Venipuncture Less Painful and Less Distressing

This clinical PowerPoint presentation was developed to support and facilitate education on using topical anesthetics for skin-breaking procedures in children. You can view a PDF version of the slide deck below.

[View PDF](#)

Outils «Toux doux» pour procédures à l'aiguille

Summary for health care professionals on different topical anesthetics, including anesthetic cream, cooling spray and Buzzy.

Toux doux, CHU Sainte Justine

[View PDF](#)

Les crèmes anesthésiques

Poster on the use of anesthetic creams prior to needle procedures.

Toux doux, CHU Sainte Justine

[View PDF](#)

Family/Patient Resources

Quick Tips Guide to Numbing Creams

A poster that provides a brief overview of how to use numbing creams (a type of topical anesthetic). This poster is available for download in multiple languages.

The Meg Foundation

[Visit website](#)

Parents: Is your child having a needle? Please ask for the numbing cream (Maxilene®)

Poster for families and patient caregivers to remind their health care providers to apply the 'numbing cream'.

Alberta Health Services (AHS)

[View PDF](#)

Numbing Cream: How to Make it Work for you!

This short video walks through tips and tricks for using numbing cream (a type of topical anesthetic).

The Meg Foundation

[Watch video](#)

Commitment to Comfort: Numbing Cream

This handout provides an overview of how to access topical anesthetics over the counter, as well as administration guidelines. It should be noted that the information and pricing provided in this handout is specific to Alberta, Canada. Options for access and regulations may differ by province.

Commitment to Comfort, Alberta Health Services

[View PDF](#)

Application de la crème anesthésiantes

This handout provides a overview for parents on different over the counter topical anesthetics administration guidelines.

[View PDF](#)

“Don't be skimpy - if you can use topical anesthetics, use it...it makes the experience better.”

Saffi, patient partner

“We were going for lumbar punctures regularly, and the doctors gave us numbing patches to put on before our appointment to help, and they helped. So I started putting a notification on my phone before we left for the hospital to apply a patch so that when we got to the hospital, they already had time to work.”

~ Karan, patient partner



Pain with Suturing

Laceration repairs are a common routine emergency procedure; however, many children may experience high levels of fear, anxiety, and pain before and during the procedures.

Overview

This section of the toolkit focuses on how to adopt pain-minimizing techniques while suturing children during laceration repairs.

[Topical anesthetics](#) are recommended to reduce pain before using beginning suturing. Recall that topical anesthetics will need to be applied in advance for them to take effect.

Absorbable sutures are recommended when suturing is required, so pain and distress associated with subsequent suture removal can be avoided. In cases where the laceration repair is relatively clean and simple, tissue adhesives (glue) may be used instead of sutures, which will also remove the pain associated with suturing.

Topical anesthetics can be combined with other pain management strategies, such as [distraction](#), [comfort positioning](#), [infant-specific strategies](#), and other evidence-based techniques to provide a comprehensive, multi-method (i.e., pharmacological, psychological, and physical) approach to reducing the pain associated with suturing and laceration repair.

Many of the pain management strategies recommended for suturing are discussed in more detail in their respective sections of this toolkit. Where appropriate, we have included links to those sections for further reading.

As noted in other sections of this toolkit, when considering options for pain management for children, it is recommended that health professionals adopt a least-invasive approach wherever possible (meaning start with the least invasive options and progress from there as required).

And, as emphasized in the section of this toolkit on pain assessment, pain should be assessed on an ongoing basis to track pain over time and to ensure the effectiveness of pain management strategies used during medical procedures.

Laceration repairs are a common routine emergency procedure; however, many children may experience high levels of fear, anxiety, and pain before and during the procedures.

In addition to the pain management strategies highlighted above, the information contained in the section on [procedural fear](#) in this toolkit may be helpful to review and incorporate.



Section 8: Pain with Suturing

Health Professional Resources

Managing pain and distress in children undergoing brief diagnostic and therapeutic procedures

Canadian Pediatric Society's position statement on managing pain and distress in children. It includes a section focusing specifically on laceration repairs and recommendations for health professional to minimize pain experienced by children undergoing these procedures.

Canadian Pediatric Society

[Visit website](#)

Peds Case Notes: Managing pain and distress in children undergoing brief diagnostic and therapeutic procedures

A one-page summary of the Canadian Pediatric Society's position statement on managing pain and distress in children. A PDF version of this one-pager can be accessed and downloaded by visiting the website below.

Canadian Pediatric Society

[Visit website](#)

Comfort in pediatric minor procedures: Pain free laceration repair for Esteban and Elsa

[View PDF](#)

Pain management for children needing laceration repair

Article published in the *Canadian Family Physician* on managing pain during laceration repair.

Clare Lambert and Ran D. Goldman

[Read article](#)

Guide clinique – Les lacérations

Clinical practice guideline for health care professionals on laceration repair in children and youth.

Urgence CHU Sainte Justine

[Visit website](#)

Patient/Family Resources

Les points de sutures: Comment avoir moins mal?

Information guide for children explaining lacerations and existing strategies for reducing procedural pain.

SPARADRAP

[View PDF](#)

NOTE: Additional resources for patients and families highlighted in other sections of this toolkit are not specific to suturing, but may be helpful in informing general best practice for pain management during a range of medical procedures, including suturing.

“Getting stitches feels odd, and it is helpful if the clinician explains what it might feel like in advance. Describing what stitches are like in an age-appropriate way would help.”

~ Saffi, patient partner



Intranasal Fentanyl

Intranasal fentanyl combined with over-the-counter analgesics is a good choice for the pharmacologic treatment of moderate to severe pain.

Overview

This toolkit section focuses on how intranasal fentanyl can be a part of the treatment plan for moderate-severe acute pain and procedural pain for short, minor procedures in children.

The current best evidence supports the use of intranasal fentanyl for children aged 1 to 18 years. In Canadian pediatric emergency departments, intranasal fentanyl combined with over-the-counter (OTC) analgesics is frequently employed as first-line treatment of moderate to severe pain. Intranasal fentanyl has a quicker onset of action and far more predictable absorption than oral delivery. Intranasal fentanyl is faster and less painful to administration than intravenous or intramuscular routes. In addition, there is evidence to support that intranasal fentanyl is safe and effective in prehospital settings and as an initial treatment for painful vaso-occlusive episodes (VOE) in sickle cell disease (SCD). Importantly, it has also been found to decrease the time required for the first parenteral opioid dose and also reduce the number of IV insertions.

While intranasal fentanyl is a good choice for the pharmacologic treatment of moderate to severe pain, especially when an intravenous is not feasible in a timely manner, it should not be used in isolation.

The best approach to pain management is multi-modal (psychological, physical and pharmacological).

Intranasal Fentanyl should be combined with other pain management strategies highlighted in this toolkit, including over-the-counter (OTC) analgesics.

[Distraction](#) and physical [comfort measures](#) (such as ice and immobilization for injured limbs) should be used in conjunction with such pharmacological pain management to help address the pain and distress associated with illness and injury.

The purpose of this section is to support you in using intranasal fentanyl for your pediatric patients in the most responsible and safest way possible.

The contents can help confirm dosing and administration, help create a policy for its use in your organization, support clinical education in intranasal fentanyl use, and provide clinical resources to make intranasal fentanyl easier to use.

Please note that hemodynamic and sedation monitoring should be provided for any child receiving an opioid medication. We urge all practitioners to follow their health care institution's recommended guidelines for monitoring.

From HSO Pediatric Pain Management Standard

The team should be sensitive to and consider potential conscious and unconscious biases (based on race, gender, socio-economic status, or other similar factors) when prescribing opioids for pain management.



Section 9: Intranasal Fentanyl

Health Professional Resources

Managing pain and distress in children undergoing brief diagnostic and therapeutic procedures

Canadian Pediatric Society's position statement on managing pain and distress in children. It includes a section focusing specifically on intranasal fentanyl and recommendations for health professional to minimize pain experienced by children undergoing these procedures.

Canadian Pediatric Society

[Visit website](#)

Guide clinique - Fentanyl intranasal

Clinical practice guidelines on intranasal fentanyl for health care professionals.

Urgence CHU Sainte Justine

[Consulter le guide](#)

Intranasal fentanyl for the treatment of children in acute pain

A systematic review identifying and evaluating all randomized controlled trials (RCTs) and quasi-randomized trials to assess the effects of intranasal fentanyl (INF) versus alternative analgesic interventions in children with acute pain

[Visit website](#)

Use of intranasal fentanyl for the relief of pediatric orthopedic trauma pain

A clinical trial to evaluate the use of intranasal fentanyl as analgesia for painful orthopedic injuries in children presenting to a pediatric emergency department (ED).

[Visit website](#)

Procédures mineures: prise en charge de la douleur et de la détresse procédurales

Clinical practice guideline on pain management related to procedures, including oral and intranasal analgesics for musculoskeletal injuries.

Urgence, CHU Sainte Justine

[Visit Website](#)

Patient/Family Resources

Short-Acting Opioid Analgesics: Information for Parents and Families

This brochure provides additional information on the use of short-acting opioids to help reduce pain while minimizing associated side effects and risks.

CHU Sainte Justine

[View PDF](#)

So you have been prescribed an opioid?

Solutions for Kids in Pain and Stollery Children's Hospital

[View PDF](#)

Just the Facts: Intranasal Fentanyl

A two-page handout designed for patients receiving intranasal fentanyl for pain management during hospitalization.

Solutions for Kids in Pain and Stollery Children's Hospital

[View PDF](#)

Training Materials

Administration de Fentanyl intranasal

Video on the intranasal administration of fentanyl, for health care professionals.

Toux doux, CHU Sainte Justine

[Watch video](#)

“Working with the patient and, depending on their age, their parents, to figure out what works well for them is important. Everybody is different, and communicating about individual preferences really can help.”

~ Raissa, patient partner

Vaccine Related Pain and Fear

Early and ongoing management of children's fear of needles and pain related to vaccinations is essential.

Overview

This toolkit section focuses on Vaccine Related Needle Pain and Fear strategies to help manage discomfort related to vaccines. Fear of needles and the poorly managed pain associated with vaccines can lead to avoidance or delays in vaccinations, diminishing the benefits of immunizations for both the individual and the community.

Research also indicates that inadequate management of pain during vaccinations can lead to avoiding other medical procedures and healthcare interactions. Therefore, early and ongoing management of children's fear of needles and pain related to vaccinations is essential.

Managing pain during vaccination procedures is considered good clinical practice by the World Health Organization. Evidence-informed strategies to improve vaccine experiences and reduce needle fear and pain exist and should be adopted to achieve best practices.

The impact of unmanaged needle pain and anxiety can extend beyond one procedure and contribute to vaccine hesitancy in children and adults.

Use the CARD system to improve your vaccination experience



Utilisez le Système CARD pour améliorer votre expérience vaccinale

The clinical practice guidelines include recommendations strategies such as distraction, comfort positioning (in an upright position), topical anesthetic and infant-specific strategies such as breastfeeding and oral sucrose.

Communication between vaccinators, patients and caregivers to develop a comfort plan and use positive language is encouraged.

Managing needle pain and fear related to vaccines is not a one size fits all approach and should be tailored to the specific needs of individual patients.

Needle Pain and Fear Facts

Vaccinations are the most common painful needle procedures.

2 out of 3 children have some degree of needle fear.

20-50% of youth are fearful of needles.

7% of parents and 8% of children report that a fear of needles is the primary reason for avoiding vaccinations.

There are simple and effective evidence-based strategies to help manage and reduce needle pain and fear associated with vaccines.

“When I need a needle, it is all my brain can think about. I remember that fear from when I was little. Even though I am older now, I still get scared, but I have learned to ask for a moment to take a deep breath and get myself ready.”

Petra, patient partner

Section 10: Vaccine Related Pain and Fear

Health Professional Resources

Reducing Pain During Vaccine Injections: Clinical Practice Guidelines

Complete clinical best practice guidelines overview for managing pain during vaccinations.

Canadian Medical Association Journal

[View PDF](#)

Commitment to Comfort: Numbing Cream

A one-page overview of how to use numbing cream to ease pain and discomfort before, during and after immunization.

Alberta Health Services

[View PDF](#)

Commitment to Comfort: Using Positive Language

One-page overview of how to use positive language to ease pain and discomfort before, during and after immunization.

Alberta Health Services

[View PDF](#)

Commitment to Comfort: Distraction Techniques

A one-page overview of how to use distraction techniques during vaccination to ease pain and discomfort before, during and after the procedure.

Alberta Health Services

[View PDF](#)

Vaccination «Tout doux» pour les professionnels de la santé: Prévention de la douleur et de l'anxiété

E-learning on pain and distress management strategies during vaccination.

Toux doux, CHU Sainte Justine

[Visit Website](#)

Pour une vaccination des enfants tout en douceur

Summary for health professionals on how to reduce distress and pain during vaccination.

Toux doux, CHU Sainte Justine

[View PDF](#)

Low-stimulus vaccine clinics help those with sensory sensitivities

An overview and tips and tricks from a low stimulation vaccination clinic.

Alberta Health Services

[Watch Video](#)

WHO Position Paper on Reducing Pain at the Time of Vaccination

A summary of critical points

World Health Organization

[View PDF](#)

Immunization Pain Management (clinician focus)

Clinical practice guidelines developed by the Help ELiminate Pain in KIDS (HELPinKIDS) team at the University of Toronto provide guidance for health care providers to help mitigate pain during immunizations.

Immunize Canada/Immunisation Canada

[Visit Website](#) (Multiple Languages)

Training Video: Vaccine Administration Procedures for Health Care Professionals

Clinician-specific guide on how to talk to patients before, during and after the procedure and carry out injections.

Immunize Canada

[Watch video](#)

[View PDF](#)

Improving the Vaccination Experience: A Guide for Healthcare Professionals

An overview of the CARD System and practical checklist to help integrate the card system into practice.

Immunize Canada

[View PDF](#)

Needle Related Fainting: Why does it happen? What to do about it?

Immunize Canada

[View PDF](#)

Patient/Family Resources

Commitment to Comfort: Using Positive Language (for caregivers)

One-page overview for caregivers on how to use positive language to ease pain and discomfort before, during and after immunization.

Alberta Health Services

[View PDF](#)

Ask A Scientist: Does it Have to Hurt?

A child-friendly video answers the question: *Does it Have to Hurt?*

Health Canada

[Watch Video](#)

[Card Game For Kids](#)

Application de la crème anesthésiantes

This handout provides an overview for parents on different over the counter topical anesthetics administration guidelines.

[View PDF](#)

Commitment to Comfort: Lessening Pain and Distress During Immunizations

This website contains information and resources for parents, children and teenagers on managing needle pain and fear before, during and after your appointment.

Alberta Health Services

[Visit Website](#)

Needle Pain & Anxiety Management for Vaccination

One-Page summary of evidence-based resources related to needle pain and fear.

Solutions for Kids in Pain

[View PDF for Children Under five years old](#)

[View PDF for Children 6 Years and Up](#)

Strategies for Dealing with Needle Fear and Anxiety

Seven strategies for dealing with needle fear and links to additional resources.

Anxiety Canada

[View PDF](#)

Tips for making vaccinations more comfortable for your child

Evidence-based strategies to help you reduce your child's pain and distress during their vaccination.

Toux doux, CHU Sainte Justine

[View PDF](#)

Un vaccin sans douleur, c'est possible!

Three videos for parents and children to learn about pain and distress management strategies during vaccination.

Toux doux, CHU Sainte Justine

[Watch Videos](#)

Vaccination chez les bébés âgés de 0-12 mois

A pamphlet providing families with tips and tricks on preparing babies for vaccinations.

Toux doux, CHU Sainte Justine

[View PDF](#)

“My son has had Central lines and too many IVs to count. He has invisible veins that always need multiple pokes. His sister was always at his bedside and she was a witness to every struggle. It affected her deeply, but she refused to leave his side. Repeated negative experiences can affect our kids in different ways and can cause needle fears and phobias.

Repeated negative experiences eventually led to avoiding routine medical appointments like immunizations. As a mom, I didn't know what to do. I felt lost and misunderstood. I felt like I was failing. I'm a public health nurse and couldn't even take my kids for their vaccines.

When Covid hit, I, like many other parents, was left wondering how I would get my kids through the door for their immunizations. I was able to attend the low stimulation clinics offered by Alberta Health Services with my kids. These clinics focus on using choice, collaboration and control to guide families through the immunization experience.

We can do many things to allow kids to feel in control of their environment. My kids need the vaccines drawn up out of sight, and my son likes the door to be left open.

Our nurse showed kindness and compassion to our situation; my kids could feel that. Over time, several positive experiences at the low-stim clinic allowed my kids to re-establish trust with health professionals. Eventually, they could receive their school vaccines in the school setting. That was a major win for us.

If I can leave you with one thing today, it's that positive immunization experiences don't take extra time, bells and whistles, or money. They just take kindness and compassion and truly understand the needs of the families in front of us.”

~ Pam, parent partner and Registered Nurse

Procedural Pain and Fear in Neurodiverse Youth

Neurodiverse youth have unique needs that are important to consider when it comes to medical procedures.

Overview

This section focuses on considerations for managing procedural pain and fear in neurodiverse youth. Neurodiverse children are at risk for having increased challenges with medical procedures.

The evidence-based strategies presented in this toolkit can be beneficial for neurodiverse children, provided that there is support and accommodation to ensure each child's individual needs are met. The key is to be flexible in the application of these interventions rather than taking a “one-size-fits-all” approach.

Overall, recognizing and drawing upon the expertise of caregivers who know their child well is critical. Communication between caregivers, their child, and health professionals in advance of a medical procedure provides the opportunity to share information and collaboratively plan.

You should seek guidance from caregivers for working with their child. For example, [distraction](#) is a helpful strategy but may not be effective if the topic or object is not of interest to the child, so you could discuss the child's special interests with the caregiver beforehand. You can also ask caregivers about how their child expresses pain/distress, if they have sensory sensitivities, and how to best communicate with them.

Neurodiversity is a broad, non-medical term that refers to the range of individual differences that people may have in their brain functioning and behavior. This term places emphasis on diversity rather than deficits. 'Neurodiversity' may include (but is not limited to) people who identify with autism spectrum disorder, Down syndrome, attention deficit hyperactivity disorder (ADHD), Intellectual disabilities, Rett syndrome, and learning disabilities. There is a wide range of abilities across neurodiverse individuals, including people who are gifted, intellectually delayed, verbal, and nonverbal.

There are diverse verbal and nonverbal communication abilities across neurodiverse children. There can also be variability in the same individuals over time - some neurodiverse children who are mostly verbal may temporarily lose their ability to verbally communicate during stressful events like medical procedures.

In general, assume that the child can understand the information that you, the health professional, are aiming to convey about the procedure. Tailor your approach to the way that the child and caregiver best receive information.

It's also important to look out for the unique ways that neurodiverse children may express their pain and fear. This will look different for each child but may include behaviors like eloping/fleeing, freezing, pacing, vocalizing/making sounds, or fidgeting. Neurodiverse children may also engage in verbal or non-verbal self-stimulatory behaviors like rocking which can help them cope. Encourage children to use their own communication supports to express themselves (e.g., picture systems, assistive devices).

Preparation ahead of time is often critical for neurodiverse children, especially those with autism, who commonly struggle with unpredictability and changes in routine. However, you can make the situation more predictable by providing the family with proactive information about why the procedure is needed and what to expect.

To prepare beforehand, families can be encouraged to use tools like [visual schedules](#), calendars, and [social stories/narratives](#) and discuss the procedure with their child. If possible, have visual and plain-language resources readily available for families at your clinic.

Additionally, health professionals could provide families with pictures of the clinic setting and/or facilitate a tour/visit before the procedure to familiarize families with the setting beforehand. Making the most of each appointment is also important. For example, if possible, administer multiple vaccines (with the most painful last) or collect multiple blood samples within the same appointment.

“As a family living in a rural area, we don’t have access to low stimulus or specialized clinics and it is difficult for me to get to clinics with my children due to my own health. To accommodate for all the sensory sensitivities and our family situation, we have started doing routine bloodwork at home. Getting this procedure done at home has provided a relaxed environment that feels safe and has the support that is needed. When possible, I have my bloodwork done at the same time, so it can be modeled for my daughter. This has increased our child’s sense of control over her body as well the environment and has brought positivity to her experiences with medical procedures as a whole.”

~ Rachel Barret, parent partner

Sensory sensitivities are common in neurodiverse youth. Medical environments and procedures involve many potentially challenging sensory experiences. You can consider accommodations like dimming lights, reducing noise and/or offering ear coverings, and limiting crowding, as well as allowing more time to avoid rushing. Access to private spaces can also improve the comfort of families and increase their control over the environment. As a health professional, you can advise families about more accessible setting options for their procedure if available (e.g., autism-friendly LifeLabs® appointments) so families can make an informed choice.

Prioritizing the child's autonomy and sense of control can improve overall comfort. You can do this by ensuring ongoing consent and understanding and honouring youth and family preferences when possible.

Children should not be forcibly restrained for a medical procedure as this can be traumatizing and limit their autonomy. Children can be supported in positioning themselves how/where they feel most safe (e.g., see [comfortable positioning options](#)) and a plan for positioning can be discussed in advance with families. You can offer simple choices; for example, do they want to use [topical anesthetics](#) and if so, how can this be planned to maximize comfort? Do they want a plaster/bandage or to skip that step? You should also avoid lying to patients or providing false information such as 'this won't hurt,' when it might.

[Positive reinforcement](#) of a child's progress and efforts to undergo a difficult medical procedure can be a beneficial behavioral strategy. Health professionals can support families who wish to use positive reinforcement by employing strategies such as praising the child (e.g., 'you're being so brave') or offering a reward as agreed upon by the caregiver (e.g., sticker or candy post procedure).

“I am always, at a minimum, uncertain and at a maximum, terrified to undergo a new procedure. If I don't yet trust the team around me or understand their suggested methods, I protect myself by withholding consent. But if you are patient and willing to take the time to listen and explain in ways that I can understand, then 'yes' is definitely attainable.”

~ Monica Harrison, patient partner

Topical anesthetics can help reduce pain during needle pokes and other procedures. You can inform families about this option. If topical anesthetics are not available at your clinic, then families can purchase products on their own at the drugstore. Topical anesthetics are administered via a cream/gel or patch, which may cause sensory discomfort for neurodiverse youth. Consider the child's sensory needs if choosing between a cream or patch. Health professionals can plan with families how they will apply the product and remove it to minimize sensory discomfort for the child.

Summary of suggestions:

Work with caregivers and their child ahead of the procedure to plan and share information.

Provide accurate information about the procedure. Ask them about the best way to provide this information.

- Have visual and plain-language resources readily available for families (e.g., instructions for steps of procedure, pre-procedure checklist, map of clinic).

Help families prepare by offering: preparatory resources, pictures of your clinic, or a clinic visit/tour ahead of the procedure for familiarization.

Value the child's autonomy by: speaking to/ not ignoring them, respecting their consent and decisions, avoiding restraint, and offering choices.

Be honest. Don't lie to children or provide false information like "it won't hurt."

Remember each child is unique. Look out for the diverse ways children may express pain/distress and ask caregivers about what to watch for.

Maximize efficiency and productivity of appointments, i.e. collecting multiple blood samples in one appointment (one venipuncture) rather than several.

Make accommodations to the sensory environment to make families more comfortable, by: dimming lights, reducing noise, offering ear coverings, and reducing crowds/offering private spaces.

- Inform families about more accessible setting options if available.

Discuss options. Provide information about topical anesthetics and support families in planning how to use them in a way that meets their needs (e.g., choosing cream vs. patch).

Discuss positive reinforcers. Support families in providing positive reinforcement if they choose to do so.

Section 11: Procedural Pain and Fear in Neurodiverse Youth Health Professional Resources

A comprehensive guide for clinicians and researchers with a focus on needlesticks and blood draws: helping your patients with intellectual and developmental disabilities

Describes strategies which can be used by health professionals to help children with intellectual and developmental disabilities more easily complete medical procedures while reducing stress felt by the patient and their caregivers.

Vanderbilt Kennedy Center

[View PDF](#)

"Psychology Works" Fact Sheet: Pain in Children with Intellectual Disabilities who are Nonverbal

This fact sheet provides information on pain expression in individuals who are non-verbal and was created to ensure accurate pain management for children with cognitive impairments. It provides an overview on the topic and additional resources for health professionals.

Canadian Psychological Association

[View PDF](#)

Bottom Line Recommendations: Caring for Children with developmental and Intellectual Disabilities in the ED

This document highlights recommendations for the treatment of children with developmental and intellectual disabilities in an emergency department setting. This covers assessment approaches, targeted questions and interventions (including environmental, behavioural and communications, and pharmacologic) recommended when caring for children with such conditions.

Translating Emergency Knowledge for Kids TREKK

[View PDF](#)

Vaccine-Related Health Professional Resources

Autism Society of America's Guide to Accessible Vaccine Clinics

This guide describes supports and accommodations which can be implemented by health professionals to reduce barriers for children with sensory sensitivities and NDDs receiving vaccinations.

Autism Society

[View PDF](#)

Accessible vaccination barriers and solutions

This document provides solutions for common barriers surrounding vaccinations. It can be used by health professionals to make vaccinations more accessible to all patients, including those with NDDs.

Autism Society

[View PDF](#)

Low-stimulus vaccine clinics help those with sensory sensitivities

A video describing the concept of a low-stimulus clinic, how it can be beneficial and who can benefit from them using perspectives from a caregiver, patient, and health professional. This resource may be useful to health professionals interested in creating a low stimulus environment for their patients.

Alberta Health Services

[Watch video](#)

Plain Language: The flu shot

Highlights answers to common questions about the flu shot written in plain language. This resource can be used by health professionals to explain the vaccination process to children or individuals with cognitive delays in order to reduce fear and stress in patients.

Association of University Centers on Disabilities, Autism Society

[View PDF](#)

Patient/Family Resources

Create your own social story

This website offers a sample social story for surgery as well as a customizable and editable template for families or health professionals to make their own surgery social story.

Rady Children's Hospital – San Diego

[Visit website](#)

Serving patients with autism

LifeLabs® offers specialized services for patients with autism. The Serving Patients with Autism program was designed to provide a caring and compassionate experience for individuals with Autism Spectrum Disorder by offering flexible appointment times, orientation sessions and visual supports and tools. This website allows you to find available locations and book appointments for specimen collection.

LifeLabs®

[Visit website](#)

Le dico de la santé

Children can click through this resource to learn about different medical terms and concepts, or search for specific words they would like to learn more about. These definitions are written in plain language and are accompanied by helpful visuals. These terms cover many themes including different medical equipment they may encounter at the hospital, treatments they may receive or operations they may undergo.

SPARADRAP

[Visit website](#)

If your child is afraid of – or refusing – a medical procedure, here's how to help

This article provides recommendations for parents on what to do when their child experiences fears of medical procedures. This resource is not specific to children with NDDs, but is helpful in understanding what strategies may be needed.

Conversation Canada

[Visit website](#)

Préparer Sofia pour son rendez-vous chez le dentiste

This resource is designed for parents to help prepare their child for a dentist visit. The strategies discussed include visual schedules and aids, playing dentist at home and accustoming the child to the sensations they will feel at the dentist.

Deux minutes pour mieux vivre l'autisme

[Visit website](#)

Construire un scénario social

This resource helps parents support their child in learning expected social rules, routines, or unexpected situations. The strategies discussed include preparing visuals to help their understanding of the situation, starting with skills already mastered by the child and highlighted expected behaviour rather than the one to avoid.

Deux Minutes Pour Mieux Vivre L'Autisme

[Visit website](#)

Autism Friendly Healthcare Social Stories

Here you can find useful social stories covering a variety of procedures including vaccines and blood draws, IVs, dental exams and more. Each story can be viewed online or downloaded and printed to have with you for the procedure.

Boston Medical Center

[Visit website](#)

Taking the work out of blood work: helping your child with an autism spectrum disorder – a parent's guide

The purpose of this pamphlet is to provide caregivers of children with ASD with strategies to reduce stress for themselves and the child during blood draw procedures. The techniques presented in this resource are also applicable to other procedures or aspects of a clinic visit.

Vanderbilt Kennedy Center

[View PDF](#)

Les fiches SantéBD

Here you can find customizable social stories that use plain language and useful visuals to explain a variety of medical procedures and general medical concepts ranging from visiting the dentist to how to manage pain and fear associated with medical treatments.

SantéBD

[Visit website](#)

Accompagner son enfant autiste à l'hôpital sans détresse, c'est possible !

These advice sheets highlight strategies that can be used by caregivers to help children who have difficulties communicating manage their stress during medical appointments. These resources present strategies for pre-appointment preparation, strategies for in the waiting room, during the visit, and during hospitalization.

CHU Sainte-Justine

[Visit website](#)

Communication non-verbale patient/soignant (MediPicto)

MediPicto is a free application designed to promote dialogue between caregivers and patients with comprehension and communication difficulties with health professionals. The app pictograms for individuals to communicate and is available in 16 languages.

Assistance publique – hôpitaux de Paris

[Visit website](#)

Vaccine-Related Patient/Family Resources

Social Story: Preparing to get the COVID-19 vaccine – Strategies if you feel nervous about needles

A video created to reduce stress and anxiety in children receiving the COVID-19 vaccination. It outlines what to expect before, during, and after getting the vaccine and highlights useful strategies that can be used to reduce stress including deep breathing and distraction.

Aptus Treatment Centre

[Watch Video](#)

Getting my vaccine – a visual guide for children with autism

This visual guide highlights in plain language what to expect when getting a vaccine. Understanding the process of getting a vaccine may help to reduce stress associated with the experience for children with NDDs.

Autism Society

[View PDF](#)

Autism friendly vaccine experience tool kit

Included in this toolkit are materials designed for health professionals to help create an inclusive vaccination experience for people with NDDs as well as materials for patients with NDDs and their families. The latter includes a comprehensive guide to vaccinations and a card for the patient to bring when getting a vaccine, indicating any accommodations they may need.

Autism Speaks

[View PDF](#)

Fear of needles & the COVID-19 vaccine: a guide for people with disabilities

This resource outlines how to prepare for a vaccine appointment and includes helpful strategies to reduce stress.

Autism Society

[View PDF](#)

References

Section 1 – Introduction

Campbell-Yeo, Marsha, et al. "Assessment and Management of Pain in Preterm Infants: A Practice Update." *Children*, vol. 9, no. 2, Feb. 2022, p. 244. DOI.org (Crossref), <https://doi.org/10.3390/children9020244>.

Health Standards Organization. "CAN/HSO 13200:2023 Pediatric pain management." 2023. <https://healthstandards.org/standard/pediatric-pain-management-can-hso-13200-2023-e>

Stevens, B. J., et al. "Epidemiology and Management of Painful Procedures in Children in Canadian Hospitals." *Canadian Medical Association Journal*, vol. 183, no. 7, Apr. 2011, pp. E403–10. DOI.org (Crossref), <https://doi.org/10.1503/cmaj.101341>.

Stevens, Bonnie J., et al. "Pain Assessment and Intensity in Hospitalized Children in Canada." *The Journal of Pain*, vol. 13, no. 9, Sept. 2012, pp. 857–65. DOI.org (Crossref), <https://doi.org/10.1016/j.jpain.2012.05.010>.

Section 2 – Assessment

Birnie, Kathryn A, et al. "ICanCope PostOp: User-Centered Design of a Smartphone-Based App for Self-Management of Postoperative Pain in Children and Adolescents." *JMIR Formative Research*, vol. 3, no. 2, Apr. 2019, p. e12028. DOI.org (Crossref), <https://doi.org/10.2196/12028>.

Birnie, Kathryn A., Amos S. Hundert, et al. "Recommendations for Selection of Self-Report Pain Intensity Measures in Children and Adolescents: A Systematic Review and Quality Assessment of Measurement Properties." *Pain*, vol. 160, no. 1, Jan. 2019, pp. 5–18. DOI.org (Crossref), <https://doi.org/10.1097/j.pain.0000000000001377>.

Birnie, Kathryn A., Patrick J. McGrath, et al. "When Does Pain Matter? Acknowledging the Subjectivity of Clinical Significance." *Pain*, vol. 153, no. 12, Dec. 2012, pp. 2311–14. PubMed, <https://doi.org/10.1016/j.pain.2012.07.033>.

Carter, Bernie, et al. "Dealing with Uncertainty: Parental Assessment of Pain in Their Children with Profound Special Needs." *Journal of Advanced Nursing*, vol. 38, no. 5, June 2002, pp. 449–57. DOI.org (Crossref), <https://doi.org/10.1046/j.1365-2648.2002.02206.x>.

Eccleston, Christopher, et al. "Delivering Transformative Action in Paediatric Pain: A Lancet Child & Adolescent Health Commission." *The Lancet Child & Adolescent Health*, vol. 5, no. 1, Jan. 2021, pp. 47–87. DOI.org (Crossref), [https://doi.org/10.1016/S2352-4642\(20\)30277-7](https://doi.org/10.1016/S2352-4642(20)30277-7).

Ellis, Jacqueline A., et al. "Establishing the Psychometric Properties and Preferences for the Northern Pain Scale." *International Journal of Circumpolar Health*, vol. 70, no. 3, Feb. 2011, pp. 274–85. DOI.org (Crossref), <https://doi.org/10.3402/ijch.v70i3.17823>.

Hemmingsson, Helena, et al. "Agreements and Disagreements between Children and Their Parents in Health-Related Assessments." *Disability and Rehabilitation*, vol. 39, no. 11, May 2017, pp. 1059–72. DOI.org (Crossref), <https://doi.org/10.1080/09638288.2016.1189603>.

Laloo, Chitra, et al. "Commercially Available Smartphone Apps to Support Postoperative Pain Self-Management: Scoping Review." *JMIR MHealth and UHealth*, vol. 5, no. 10, Oct. 2017, p. e162. DOI.org (Crossref), <https://doi.org/10.2196/mhealth.8230>.

Latimer, M., et al. "Expression of Pain among Mi'kmaq Children in One Atlantic Canadian Community: A Qualitative Study." *CMAJ Open*, vol. 2, no. 3, July 2014, pp. E133–38. DOI.org (Crossref), <https://doi.org/10.9778/cmajo.20130086>.

Latimer, Margot, John R. Sylliboy, et al. "Creating a Safe Space for First Nations Youth to Share Their Pain." *PAIN Reports*, vol. 3, no. 1, Sept. 2018, p. e682. DOI.org (Crossref), <https://doi.org/10.1097/PR9.0000000000000682>.

Latimer, Margot, Amy Bombay, et al. "Pain in the Cultural Context." *Oxford Textbook of Pediatric Pain*, by Margot Latimer et al., edited by Bonnie J. Stevens et al., Oxford University Press, 2021, pp. 101–08. DOI.org (Crossref), <https://doi.org/10.1093/med/9780198818762.003.0011>.

Latimer, Margot, Danielle Simandl, et al. "Understanding the Impact of the Pain Experience on Aboriginal Children's Wellbeing: Viewing through a Two-Eyed Seeing Lens." *First Peoples Child & Family Review*, vol. 9, no. 1, July 2014, pp. 22–37. <https://fpcfr.com/index.php/FPCFR/article/view/183>.

Morais, Calia A., et al. "Confronting Racism in Pain Research: A Call to Action." *The Journal of Pain*, vol. 23, no. 6, June 2022, pp. 878–92. DOI.org (Crossref), <https://doi.org/10.1016/j.jpain.2022.01.009>.

Quinn, Brenna L., et al. "Pain Assessment in Children with Special Needs: A Review of the Literature." *Exceptional Children*, vol. 82, no. 1, Oct. 2015, pp. 44–57. DOI.org (Crossref), <https://doi.org/10.1177/0014402915585480>.

Shahin, Saeideh, et al. "Environmental Factors That Impact the Workplace Participation of Transition-Aged Young Adults with Brain-Based Disabilities: A Scoping Review." *International Journal of Environmental Research and Public Health*, vol. 17, no. 7, Mar. 2020, p. 2378. DOI.org (Crossref), <https://doi.org/10.3390/ijerph17072378>.

Solodiuk, Jean C., et al. "Validation of the Individualized Numeric Rating Scale (INRS): A Pain Assessment Tool for Nonverbal Children with Intellectual Disability." *Pain*, vol. 150, no. 2, Aug. 2010, pp. 231–36. DOI.org (Crossref), <https://doi.org/10.1016/j.pain.2010.03.016>.

von Baeyer, Carl L, et al. "Pain Charts (Body Maps or Manikins) in Assessment of the Location of Pediatric Pain." *Pain Management*, vol. 1, no. 1, Jan. 2011, pp. 61–68. DOI.org (Crossref), <https://doi.org/10.2217/pmt.10.2>.

von Baeyer, Carl L., et al. "Systematic Review of Self-Report Measures of Pain Intensity in 3- and 4-Year-Old Children: Bridging a Period of Rapid Cognitive Development." *The Journal of Pain*, vol. 18, no. 9, Sept. 2017, pp. 1017–26. DOI.org (Crossref), <https://doi.org/10.1016/j.jpain.2017.03.005>.

von Baeyer, Carl L., and Lara J. Spagrud. "Systematic Review of Observational (Behavioral) Measures of Pain for Children and Adolescents Aged 3 to 18 Years." *Pain*, vol. 127, no. 1, Jan. 2007, pp. 140–50. DOI.org (Crossref), <https://doi.org/10.1016/j.pain.2006.08.014>.

Section 3 – Procedural fear

Birnie, Kathryn, and Meghan McMurtry. "If Your Child Is Afraid of – or Refusing – a Medical Procedure, Here's How to Help." *The Conversation*, 2 Dec. 2021, <http://theconversation.com/if-your-child-is-afraid-of-or-refusing-a-medical-procedure-heres-how-to-help-170923>.

McMurtry, C. Meghan, Anna Taddio, et al. "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." *Cognitive Behaviour Therapy*, vol. 45, no. 3, May 2016, pp. 217–35. DOI.org (Crossref), <https://doi.org/10.1080/16506073.2016.1157204>.

McMurtry, C. Meghan, Rebecca Pillai Riddell, et al. "Far from 'Just a Poke': Common Painful Needle Procedures and the Development of Needle Fear." *The Clinical Journal of Pain*, vol. 31, no. 10 Suppl, Oct. 2015, pp. S3-11. PubMed, <https://doi.org/10.1097/AJP.0000000000000272>.

Taddio, Anna, et al. "Managing Pain and Fear: Playing Your CARDS to Improve the Vaccination Experience." *Canada Communicable Disease Report*, vol. 47, no. 1, Jan. 2021, pp. 87–91. DOI.org (Crossref), <https://doi.org/10.14745/ccdr.v47i01a12>.

Taddio, Anna, and C. Meghan McMurtry. "Psychological Interventions for Needle-Related Procedural Pain and Distress in Children and Adolescents." *Paediatrics & Child Health*, vol. 20, no. 4, May 2015, pp. 195–96. PubMed, <https://doi.org/10.1093/pch/20.4.195>.

Section 4 – Distraction

Ali, Samina, et al. "An Evidence-Based Approach to Minimizing Acute Procedural Pain in the Emergency Department and Beyond." *Pediatric Emergency Care*, vol. 32, no. 1, Jan. 2016, pp. 36–42. DOI.org (Crossref), <https://doi.org/10.1097/PEC.0000000000000669>.

Birnie, K. A., et al. "Systematic Review and Meta-Analysis of Distraction and Hypnosis for Needle-Related Pain and Distress in Children and Adolescents." *Journal of Pediatric Psychology*, vol. 39, no. 8, Sept. 2014, pp. 783–808. DOI.org (Crossref), <https://doi.org/10.1093/jpepsy/jsu029>.

Birnie, Kathryn A, et al. "Psychological Interventions for Needle-Related Procedural Pain and Distress in Children and Adolescents." *Cochrane Database of Systematic Reviews*, vol. 2018, no. 10, Oct. 2018. DOI.org (Crossref), <https://doi.org/10.1002/14651858.CD005179.pub4>.

Cohen, Lindsey L. "Behavioral Approaches to Anxiety and Pain Management for Pediatric Venous Access." *Pediatrics*, vol. 122, no. Supplement_3, Nov. 2008, pp. S134–39. DOI.org (Crossref), <https://doi.org/10.1542/peds.2008-1055f>.

Koller, Donna, and Ran D. Goldman. "Distraction Techniques for Children Undergoing Procedures: A Critical Review of Pediatric Research." *Journal of Pediatric Nursing*, vol. 27, no. 6, Dec. 2012, pp. 652–81. DOI.org (Crossref), <https://doi.org/10.1016/j.pedn.2011.08.001>.

Pillai Riddell, Rebecca, et al. "Nonpharmacological Management of Procedural Pain in Infants and Young Children: An Abridged Cochrane Review." *Pain Research and Management*, vol. 16, no. 5, 2011, pp. 321–30. DOI.org (Crossref), <https://doi.org/10.1155/2011/489286>.

Pillai Riddell, Rebecca R., et al. "Non-Pharmacological Management of Infant and Young Child Procedural Pain." *Cochrane Database of Systematic Reviews*, vol. 2015, no. 12, Dec. 2015. DOI.org (Crossref), <https://doi.org/10.1002/14651858.CD006275.pub3>.

Trottier, Evelyne D., et al. "Managing Pain and Distress in Children Undergoing Brief Diagnostic and Therapeutic Procedures." *Paediatrics & Child Health*, vol. 24, no. 8, Dec. 2019, pp. 509–35. DOI.org (Crossref), <https://doi.org/10.1093/pch/pxz026>.

Section 5 – Comfort positioning

Pillai Riddell, Rebecca, et al. "Nonpharmacological Management of Procedural Pain in Infants and Young Children: An Abridged Cochrane Review." *Pain Research and Management*, vol. 16, no. 5, 2011, pp. 321–30. DOI.org (Crossref), <https://doi.org/10.1155/2011/489286>.

Pillai Riddell, Rebecca R., et al. "Non-Pharmacological Management of Infant and Young Child Procedural Pain." *Cochrane Database of Systematic Reviews*, vol. 2017, no. 12, Dec. 2015. DOI.org (Crossref), <https://doi.org/10.1002/14651858.CD006275.pub3>.

Trottier, Evelyne D., et al. "Managing Pain and Distress in Children Undergoing Brief Diagnostic and Therapeutic Procedures." *Paediatrics & Child Health*, vol. 24, no. 8, Dec. 2019, pp. 509–35. PubMed, <https://doi.org/10.1093/pch/pxz026>.

Section 6 – Infant strategies

Bueno, Mariana, et al. "A Systematic Review and Meta-Analyses of Nonsucrose Sweet Solutions for Pain Relief in Neonates." *Pain Research & Management*, vol. 18, no. 3, 2013, pp. 153–61. PubMed, <https://doi.org/10.1155/2013/956549>.

Harrison, Denise, Mariana Bueno, et al. "Prevention and Management of Pain and Stress in the Neonate." *Research and Reports in Neonatology*, vol. 5, Dec. 2015, pp. 9–16, <https://doi.org/10.2147/RRN.S52378>.

Harrison, Denise, Janet Yamada, et al. "Sweet Tasting Solutions for Reduction of Needle-Related Procedural Pain in Children Aged One to 16 Years." *The Cochrane Database of Systematic Reviews*, vol. 2015, no. 5, May 2015. *PubMed*, <https://doi.org/10.1002/14651858.CD008408.pub3>.

Johnston, Celeste, et al. "Skin-to-Skin Care for Procedural Pain in Neonates." *Cochrane Database of Systematic Reviews*, vol. 2017, no. 2, Feb. 2017. *DOI.org (Crossref)*, <https://doi.org/10.1002/14651858.CD008435.pub3>.

Kassab, Manal, et al. "Sweet-Tasting Solutions for Needle-Related Procedural Pain in Infants One Month to One Year of Age." *The Cochrane Database of Systematic Reviews*, vol. 2012, no. 12, Dec. 2012. *PubMed*, <https://doi.org/10.1002/14651858.CD008411.pub2>.

Pillai Riddell, Rebecca R., et al. "Non-Pharmacological Management of Infant and Young Child Procedural Pain." *The Cochrane Database of Systematic Reviews*, vol. 2015, no. 12, Dec. 2015. *PubMed*, <https://doi.org/10.1002/14651858.CD006275.pub3>.

Shah, Prakeshkumar S., et al. "Breastfeeding or Breast Milk for Procedural Pain in Neonates." *The Cochrane Database of Systematic Reviews*, vol. 2012, no. 12, Dec. 2012. *PubMed*, <https://doi.org/10.1002/14651858.CD004950.pub3>.

Stevens, Bonnie, et al. "Sucrose for Analgesia in Newborn Infants Undergoing Painful Procedures." *Cochrane Database of Systematic Reviews*, vol. 2016, no. 7, July 2016. *DOI.org (Crossref)*, <https://doi.org/10.1002/14651858.CD001069.pub5>.

Section 7 – Topical anesthetics

Ali, Samina, et al. "An Evidence-Based Approach to Minimizing Acute Procedural Pain in the Emergency Department and Beyond." *Pediatric Emergency Care*, vol. 32, no. 1, Jan. 2016, pp. 36–42; quiz 43–44. *PubMed*, <https://doi.org/10.1097/PEC.0000000000000669>.

Crowley, Melanie A., et al. "Emergency Nursing Resource: Needle-Related Procedural Pain in Pediatric Patients in the Emergency Department." *Journal of Emergency Nursing*, vol. 37, no. 3, May 2011, pp. 246–51. *DOI.org (Crossref)*, <https://doi.org/10.1016/j.jen.2011.02.013>.

Czarnecki, Michelle L., et al. "Procedural Pain Management: A Position Statement with Clinical Practice Recommendations." *Pain Management Nursing*, vol. 12, no. 2, June 2011, pp. 95–111. *DOI.org (Crossref)*, <https://doi.org/10.1016/j.pmn.2011.02.003>.

Lander, Janice A., et al. "EMLA and Amethocaine for Reduction of Children's Pain Associated with Needle Insertion." *Cochrane Database of Systematic Review*, vol. 2014, no. 3, Mar. 2014. *DOI.org (Crossref)*, <https://doi.org/10.1002/14651858.CD004236.pub3>.

Poonai, Naveen, et al. "A Comparison of Amethocaine and Liposomal Lidocaine Cream as a Pain Reliever before Venipuncture in Children: A Randomized Control Trial." *Pediatric Emergency Care*, vol. 28, no. 2, Feb. 2012, pp. 104–08. *DOI.org (Crossref)*, <https://doi.org/10.1097/PEC.0b013e3182442c3b>.

Schreiber, S., et al. "Does EMLA Cream Application Interfere with the Success of Venipuncture or Venous Cannulation? A Prospective Multicenter Observational Study." *European Journal of Pediatrics*, vol. 172, no. 2, Feb. 2013, pp. 265–68. *PubMed*, <https://doi.org/10.1007/s00431-012-1866-6>.

Shah, Vibhuti S., and Arne Ohlsson. "Venepuncture versus Heel Lance for Blood Sampling in Term Neonates." *The Cochrane Database of Systematic Reviews*, vol. 2011, no. 10, Oct. 2011. *PubMed*, <https://doi.org/10.1002/14651858.CD001452.pub4>.

Taddio, A. "Liposomal Lidocaine to Improve Procedural Success Rates and Reduce Procedural Pain among Children: A Randomized Controlled Trial." *Canadian Medical Association Journal*, vol. 172, no. 13, June 2005, pp. 1691–95. *DOI.org (Crossref)*, <https://doi.org/10.1503/cmaj.045316>.

Trottier, Evelyne D., et al. "Managing Pain and Distress in Children Undergoing Brief Diagnostic and Therapeutic Procedures." *Paediatrics & Child Health*, vol. 24, no. 8, Dec. 2019, pp. 509–21. *DOI.org (Crossref)*, <https://doi.org/10.1093/pch/pxz026>.

Zempsky, William T. "Pharmacologic Approaches for Reducing Venous Access Pain in Children." *Pediatrics*, vol. 122 Suppl 3, Nov. 2008, pp. S140-153. *PubMed*, <https://doi.org/10.1542/peds.2008-1055g>.

Section 8 – Suturing

Cepeda, M. Soledad, et al. "Adjusting the PH of Lidocaine for Reducing Pain on Injection." *Cochrane Database of Systematic Reviews*, vol. 2015, no. 5, May 2015. *DOI.org (Crossref)*, <https://doi.org/10.1002/14651858.CD006581.pub3>.

Farion, K., et al. "Tissue Adhesives for Traumatic Lacerations in Children and Adults." *The Cochrane Database of Systematic Reviews*, vol. 2002, no. 3, Jul. 2002. *PubMed*, <https://doi.org/10.1002/14651858.CD003326>.

Farion, Ken J., et al. "Tissue Adhesives for Traumatic Lacerations: A Systematic Review of Randomized Controlled Trials." *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine*, vol. 10, no. 2, Feb. 2003, pp. 110–18. *PubMed*, <https://pubmed.ncbi.nlm.nih.gov/12574007/>.

Fein, Joel A., et al. "Relief of Pain and Anxiety in Pediatric Patients in Emergency Medical Systems." *Pediatrics*, vol. 130, no. 5, Nov. 2012, pp. e1391-1405. *PubMed*, <https://doi.org/10.1542/peds.2012-2536>.

Harman, Stuart, et al. "Efficacy of Pain Control with Topical Lidocaine-Epinephrine-Tetracaine during Laceration Repair with Tissue Adhesive in Children: A Randomized Controlled Trial." *Canadian Medical Association Journal*, vol. 185, no. 13, Sept. 2013, pp. E629-634. *PubMed*, <https://doi.org/10.1503/cmaj.130269>.

Lambert, Clare, and Ran D. Goldman. "Pain Management for Children Needing Laceration Repair." *Canadian Family Physician Medecin De Famille Canadien*, vol. 64, no. 12, Dec. 2018, pp. 900-02. *PubMed*, <https://pubmed.ncbi.nlm.nih.gov/30541804/>.

Nicks, Bret A., et al. "Acute Wound Management: Revisiting the Approach to Assessment, Irrigation, and Closure Considerations." *International Journal of Emergency Medicine*, vol. 3, no. 4, Aug. 2010, pp. 399-407. *PubMed*, <https://doi.org/10.1007/s12245-010-0217-5>.

Section 9 – Intranasal fentanyl

Bailey, Benoit, and Evelyne D. Trottier. "Managing Pediatric Pain in the Emergency Department." *Pediatric Drugs*, vol. 18, 2016, pp. 287-301. *PubMed*, <https://pubmed.ncbi.nlm.nih.gov/27260499/>

Beck, Carolyn E., et al. "Acute complications in children with sickle cell disease: Prevention and management." *Paediatrics & Child Health*, vol. 27, no. 1, 2022, pp. 50-55. <https://cps.ca/en/documents/position/acute-complications-with-sickle-cell>

Cole, Joanne, et al. "Intranasal Fentanyl in 1-3-Year-Olds: A Prospective Study of the Effectiveness of Intranasal Fentanyl as Acute Analgesia." *Emergency Medicine Australasia: EMA*, vol. 21, no. 5, Oct. 2009, pp. 395-400. *PubMed*, <https://doi.org/10.1111/j.1742-6723.2009.01216.x>.

Fowler, Megan, et al. "Knowledge, Attitudes and Practices of Canadian Pediatric Emergency Physicians Regarding Short-Term Opioid Use: A Descriptive, Cross-Sectional Survey." *CMAJ Open*, vol. 8, no. 1, Jan. 2020, pp. E148-55. *DOI.org (Crossref)*, <https://doi.org/10.9778/cmajo.20190101>.

Frey, Theresa M., et al. "Effect of Intranasal Ketamine vs Fentanyl on Pain Reduction for Extremity Injuries in Children: The PRIME Randomized Clinical Trial." *JAMA Pediatrics*, vol. 173, no. 2, Feb. 2019, pp. 140-46. *PubMed*, <https://doi.org/10.1001/jamapediatrics.2018.4582>.

Holdgate, Anna, et al. "The Implementation of Intranasal Fentanyl for Children in a Mixed Adult and Pediatric Emergency Department Reduces Time to Analgesic Administration." *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine*, vol. 17, no. 2, Feb. 2010, pp. 214-17. *PubMed*, <https://doi.org/10.1111/j.1553-2712.2009.00636.x>.

Kusre, Sandeep Rahul. "Towards Evidence Based Emergency Medicine: Best BETs from the Manchester Royal Infirmary. Bet 4: Is Intranasal Fentanyl Better than Parenteral Morphine for Managing Acute Severe Pain in Children?" *Emergency Medicine Journal: EMJ*, vol. 28, no. 12, Dec. 2011, pp. 1077-78. *PubMed*, <https://doi.org/10.1136/emered-2011-200892>.

Lindbeck, George, et al. "Evidence-Based Guidelines for Prehospital Pain Management: Recommendations." *Prehospital Emergency Care*, vol. 27, no. 2, Feb. 2023, pp. 144-53. *DOI.org (Crossref)*, <https://doi.org/10.1080/10903127.2021.2018073>.

Míguez, Ma Concepción, et al. "Retrospective Comparison of Intranasal Fentanyl and Inhaled Nitrous Oxide to Intravenous Ketamine and Midazolam for Painful Orthopedic Procedures in a Pediatric Emergency Department." *Pediatric Emergency Care*, vol. 37, no. 3, Mar. 2021, pp. e136-40. *PubMed*, <https://doi.org/10.1097/PEC.0000000000001788>.

Mudd, Shawna. "Intranasal Fentanyl for Pain Management in Children: A Systematic Review of the Literature." *Journal of Pediatric Health Care: Official Publication of National Association of Pediatric Nurse Associates & Practitioners*, vol. 25, no. 5, 2011, pp. 316-22. *PubMed*, <https://doi.org/10.1016/j.pedhc.2010.04.011>.

Murphy, Adrian, et al. "Intranasal Fentanyl for the Management of Acute Pain in Children." *The Cochrane Database of Systematic Reviews*, vol. 2014, no. 10, Oct. 2014. *PubMed*, <https://doi.org/10.1002/14651858.CD009942.pub2>.

Paquin, Hugo, et al. "Evaluation of a clinical protocol using intranasal fentanyl for treatment of vaso-occlusive crisis in sickles cell patients in the emergency department." *Paediatrics & Child Health*, vol. 25, no. 5, 2020, pp. 293-299. *PubMed*, <https://pubmed.ncbi.nlm.nih.gov/32765165/>.

Saunders, Mary, et al. "Use of Intranasal Fentanyl for the Relief of Pediatric Orthopedic Trauma Pain." *Academic Emergency Medicine: Official Journal of the Society for Academic Emergency Medicine*, vol. 17, no. 11, Nov. 2010, pp. 1155-61. *PubMed*, <https://doi.org/10.1111/j.1553-2712.2010.00905.x>.

Section 10 – Vaccine related pain and fear

McLenon, Jennifer, and Mary A. M. Rogers. "The Fear of Needles: A Systematic Review and Meta-Analysis." *Journal of Advanced Nursing*, vol. 75, no. 1, Jan. 2019, pp. 30-42. *DOI.org (Crossref)*, <https://doi.org/10.1111/jan.13818>.

McMurtry, C. Meghan, Anna Taddio, et al. "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." *Cognitive Behaviour Therapy*, vol. 45, no. 3, May 2016, pp. 217-35. *DOI.org (Crossref)*, <https://doi.org/10.1080/16506073.2016.1157204>.

McMurtry, C. Meghan, Rebecca Pillai Riddell, et al. "Far from 'Just a Poke': Common Painful Needle Procedures and the Development of Needle Fear." *The Clinical Journal of Pain*, vol. 31, no. Supplement 10, Oct. 2015, pp. S3–11. DOI.org (Crossref), <https://doi.org/10.1097/AJP.0000000000000272>.

Taddio, Anna, C. Meghan McMurtry, et al. "Reducing Pain during Vaccine Injections: Clinical Practice Guideline." *Canadian Medical Association Journal*, vol. 187, no. 13, Sept. 2015, pp. 975–82. DOI.org (Crossref), <https://doi.org/10.1503/cmaj.150391>.

Taddio, Anna, Moshe Ipp, et al. "Survey of the Prevalence of Immunization Non-Compliance Due to Needle Fears in Children and Adults." *Vaccine*, vol. 30, no. 32, July 2012, pp. 4807–12. DOI.org (Crossref), <https://doi.org/10.1016/j.vaccine.2012.05.011>.

Taddio, Anna, Vibhuti Shah, et al. "Usability and Knowledge Testing of Educational Tools about Infant Vaccination Pain Management Directed to Postnatal Nurses." *BMC Medical Education*, vol. 15, Dec. 2015, p. 45. DOI.org (Crossref), <https://doi.org/10.1186/s12909-015-0305-6>.

Section 11 – Procedural Pain and Fear in Neurodiverse Youth

Davignon, Meghan N., et al. "Parent and provider perspectives on procedural care for children with autism spectrum disorders." *Journal of Developmental & Behavioral Pediatrics*, vol. 35, no. 3, Apr. 2014, pp. 207-215. DOI.org (Crossref), <https://doi.org/10.1097/DBP.0000000000000036>.

Dobson, Olivia, et al. "Making needle procedures comfortable for autistic children: Caregiver perspectives." *Research in Autism Spectrum Disorders*, vol. 107, Sept. 2023, pp. 102208. DOI.org (Crossref), <https://doi.org/10.1016/j.rasd.2023.102208>.

Kupzyk, Sara, et al. "A review of strategies to increase comfort and compliance with medical/dental routines in persons with intellectual and developmental disabilities." *Journal of Developmental and Physical Disabilities*, vol. 31, no. 2, Jan. 2019, pp. 231–249. DOI.org (Crossref), <https://doi.org/10.1007/s10882-018-09656-y>.

Liu, Jun, et al. "Challenges in the diagnosis and management of pain in individuals with autism spectrum disorder." *Review Journal of Autism Developmental Disorders*, vol. 7, no. 4, Mar 2020, pp. 352–363. DOI.org (Crossref), <https://doi.org/10.1007/s40489-020-00199-7>.

Loschiavo, Keana, et al. "Exploring the routine vaccination experience of Australian autistic children and their families: A qualitative study." *SSM. Qualitative Research in Health*, vol. 2, Dec. 2022, 100193. DOI.org (Crossref), <https://doi.org/10.1016/j.ssmqr.2022.100193>.

Muskat, Barbara, et al. "Autism comes to the hospital: The experiences of patients with autism spectrum disorder, their parents and health-care providers at two Canadian paediatric hospitals." *Autism*, vol. 19, no. 4, May 2014, pp. 482–490. DOI.org (Crossref), <https://doi.org/10.1177/1362361314531341>.

Slifer, Keith J. et al. "Distraction, exposure therapy, counterconditioning, and topical anesthetic for acute pain management during needle sticks in children with intellectual and developmental disabilities." *Clinical Pediatrics*, vol. 50, no. 8, Feb. 2011, pp. 688–697. DOI.org (Crossref), <https://doi.org/10.1177/0009922811398959>.

Taghizadeh, Neda, et al. "The experiences of children with autism spectrum disorder, their caregivers and health care providers during day procedure: A mixed methods study." *Pediatric Anesthesia*, vol. 29, no. 9, Aug. 2019, pp. 927–937. DOI.org (Crossref), <https://doi.org/10.1111/pan.13689>.

Wilson, Shelby, et al. "Medical care experiences of children with autism and their parents: A scoping review." *Child: Care, Health & Development*, vol. 44, no. 6, Aug. 2018, pp. 807–817. DOI.org (Crossref), <https://doi.org/10.1111/cch.12611>.

