

Position Statement

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

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Abstract

Common medical procedures to assess and treat patients can cause significant pain and distress. Clinicians should have a basic approach for minimizing pain and distress in children, particularly for frequently used diagnostic and therapeutic procedures. This statement focuses on infants (excluding care provided in the NICU), children, and youth who are undergoing common, minor but painful medical procedures. Simple, evidence-based strategies for managing pain and distress are reviewed, with guidance for integrating them into clinical practice as an essential part of health care. Health professionals are encouraged to use minimally invasive approaches and, when painful procedures are unavoidable, to combine simple pain and distress-minimizing strategies to improve the patient, parent, and health care provider experience. Health administrators are encouraged to create institutional policies, improve education and access to guidelines, create child- and youth-friendly environments, ensure availability of appropriate staff, equipment and pharmacological agents, and perform quality audits to ensure pain management is optimal.

Keywords: *Distress; Paediatrics; Pain; Procedures; Treatment*

BACKGROUND

Common medical procedures used to assess and treat patients can cause significant pain and distress, particularly in children (1,2). Examples include intravenous (IV) cannulation, blood draws, heel lances, lumbar punctures (LPs), urethral catheterizations, wound repair, and medical imaging of fractures and dislocations. Needle-related pain is reported by children, especially among the very young, to be the worst pain they experience while in hospital (3,4). Under-treated pain has short and long-term negative consequences for both children and their families, and can result in avoidance of medical care (4,5).

Despite many existing best practice strategies to manage pain and ample evidence for their effectiveness, suboptimal care is

still consistently reported (1,2,5–10). Time constraints and lack of material resources, personnel or knowledge, as well as safety concerns, are often reported as reasons for limiting the use of effective strategies (1,6,9,11,12). Both nurses and physicians have indicated that access to synthesized, up-to-date guidelines and institutional supports would facilitate implementation of change for better pain management (6,8,12).

Addressing the pain and distress associated with common, minor medical procedures is integral to quality health care. Further, empowering the family and the child to have an active role is essential for pain management to be effective. Health professionals are encouraged to choose minimally invasive approaches and, when a painful procedure is unavoidable, to

use a combination of simple strategies to improve the patient, parent, and health care provider experience (1). Combining strategies is often more effective than using one strategy alone and can also facilitate procedural success for care providers (13–17). This statement recommends combining three different approaches—physical, psychological, and pharmacological—to minimize pain and distress. This multimodal, ‘3-P’ approach (18) should be assessed for efficacy and modified according to need, using age-appropriate pain assessment tools: www.pediadol.org/evaluation and <http://www.about-kidshealth.ca/En/ResourceCentres/Pain/PainAssessment/MeasurementofPain/Pages/Tools-For-Measuring-Pain.aspx>.

This statement provides direct guidance to clinicians for managing procedural pain and distress by summarizing current evidence supporting physical, psychological, and pharmacological interventions (14–17). The focus here is on minor procedures. More invasive procedures, such as circumcision (19), painful medical conditions, pain management in neonatal units (20), or IV procedural sedation and analgesia, are beyond the scope of this statement.

Physical strategies

Comfort positioning

Sitting upright, rather than the traditional approach of lying on a bed while being physically restrained, has been shown to increase children’s comfort during procedures such as IV insertion or vaccination (21–24). Sitting upright reduces distress by enhancing children’s sense of control. Smaller children may sit on their caregiver’s lap (Figures 1 and 2) (22). Secure, comforting, or ‘hugging’ holds serve to assist, rather than restrain, the child (25). Caregivers can also help support their child with distraction and soothing words while assisting with comfort positioning (26). Family presence should always be encouraged, while taking caregiver preferences into account (1,27).

Infant-focused strategies

Breastfeeding can be a multimodal comfort strategy, simultaneously offering skin-to-skin contact, the comfort of sucking and rocking, and (likely) the transfer of endogenous opiates in breast milk (28). Breastfeeding reduces procedural pain in newborns receiving heel sticks and venipunctures, as well as cry duration and pain scores during infant immunizations (28,29).

Sucrose has been studied at various dosages and concentrations (9,13,30). For painful procedures (e.g., heel lances, venipunctures, intramuscular [IM] injections, immunization), its usefulness has been clearly shown in both preterm and term neonates (13). For this age group, it has similar effectiveness to breastfeeding for reducing needle pain (29). Sucrose may also reduce cry duration in infants 1 to 12 months of age (31,32), but there is insufficient evidence to support its use beyond 12 months (33). Recommended dosing varies from 0.5 mL to 2 mL of 24% to 33% sucrose. To be most effective, part of the dose must be given 2 minutes before the



Figure 1. Sitting position on caregiver’s lap; child facing the phlebotomist.



Figure 2. Sitting position on caregiver’s lap; child facing parent.

procedure and the rest during the procedure (Figure 3) (9,34). Homemade solutions can be prepared by diluting 5 g of sugar (one restaurant packet) in 10 mL of water (35). Sucrose reduces composite pain scores by approximately 20% and is most effective when combined with other strategies (13).

Simple physical strategies such as non-nutritive sucking (i.e., pacifier use) and rocking or holding an infant can also lower pain and distress (36). Skin-to-skin or ‘kangaroo’ care reduces pain scores in preterm and term infants undergoing painful procedures (Figure 4) (37). Swaddling and facilitated tucking are also effective in preterm infants (Figure 5) (36). These simple physical strategies improve the pain experience for infants at low cost and with virtually no risk. Because these strategies cannot eliminate procedural pain completely, using them in combination with pharmacotherapy, whenever possible, is recommended.

Choosing less painful approaches

When a less painful option is available, avoiding certain painful procedures, such as heel lances and IM injections, is recommended (1,5). Since heel lancing is more painful than venipuncture, with or without sucrose, heel lances should be avoided (1,5). When venipuncture performed by an

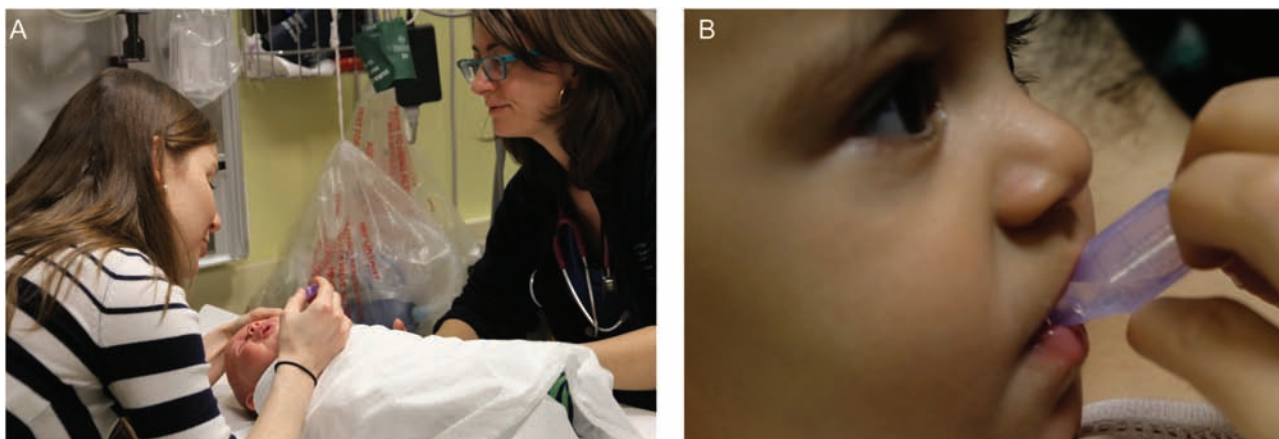


Figure 3. Sucrose administration.

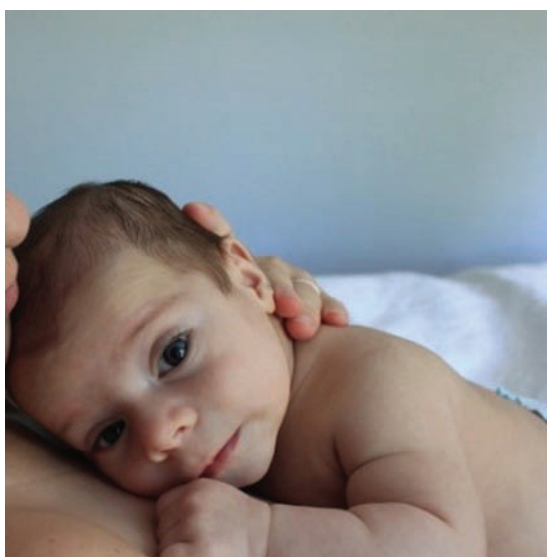


Figure 4. Kangaroo care.

experienced phlebotomist is compared with heel lancing, the number needed to treat to avoid repeat skin puncture is three (38). Moreover, when both an IV insertion and blood tests are required, they should be done at the same time, whenever possible. Daily bloodwork should not be prescribed in an automatic, routine fashion. If this is required for special or critical situations, it should be restricted to a short period of time and reassessed daily. Grouping bloodwork is also important.

Psychological strategies

Preparation

There is an undeniable relationship between distress and perceived pain (1) and managing the first can directly impact the latter (see also Videos in Clinical Medicine: Managing Procedural Anxiety in Children, <https://www.nejm.org/doi/full/10.1056/NEJMvcm1411127> [39]). Children over the developmental age of 4 years generally benefit from



Figure 5. Swaddling.

simple information regarding what to expect. Explaining the steps of a procedure, receiving sensory information about what they might feel (e.g., cold, wet), seeing the medical supplies that will be used, and offering realistic choices or roles related to the procedure helps children to feel more in control (1).

Parents similarly require preparation regarding what to expect, what they can do to help with positioning and distraction, and what might be best to say during a procedure. Advise parents to avoid false or premature reassurances, such as: 'This won't hurt', 'It's all over', or 'This is the last stitch'. The end of a procedure cannot always be predicted reliably, or the effectiveness of an analgesia guaranteed. Also, saying 'I'm sorry' can confuse a child and should be avoided in the context of performing painful procedures.

Health care providers should also be well prepared before a procedure, use proper technique, and have enough training and knowledge to perform it. Careful, detailed explanations should be offered, to optimize informed parental consent. Level-appropriate delegation and supervision of invasive techniques in academic environments should be provided to

trainees. (Instructional videos for various procedures are available at: <https://www.nejm.org/multimedia/medical-videos> [40].)

Distraction

Distraction strategies (e.g., blowing bubbles, reading a story, offering an animated video, an interactive game) are effective in reducing the pain and distress related to a variety of needle procedures (Figure 6) (21,41–44). Distraction is the most widely studied cognitive strategy for needle-related procedural pain and distress in children ≥ 2 years old (41,42). There is also good evidence that distraction can be effective during laceration repair (45,46).

A child-friendly environment, with developmentally appropriate toys, colourful wall decor, and pictures on the ceiling (1,4) helps alleviate stress and doubles as a giant ‘seek and find’ game (e.g., similar to ‘I-Spy’) that can be used in the distraction plan before and during a supine procedure (Figure 7) (47). Web tools are available for clinicians who wish to create their own distraction kits: <https://ken.caphc.org/xwiki/bin/view/Paediatric+Pain/Distraction+Toolkit> (48).

For older children, the most effective distractions focus on empowerment by asking about and attending to their preferences (either offering them an age-appropriate active distraction [e.g., an electronic game] or something more passive [e.g., a video]) (49). Engaging children in nonprocedure-related conversation also helps to shift their attention away from painful stimuli (4) and, when appropriate, humour can be used to alleviate tension. Caregivers can help with choice strategy and should be encouraged to bring items from home to distract their child (e.g., a tablet or smartphone, favourite blanket, or toy) (48).

Deep breathing

Deep breathing can be used as a relaxation strategy (42) to reduce perceived pain. For example, the health care



Figure 6. Distraction.



Figure 7. Overhead ‘seek and find’ posters.



Figure 8. Blowing bubbles.

practitioner may ask the child to ‘Take a deep breath in and blow out slowly [tummy breathing]’, practice the technique with the child, and then help with prompts during the procedure. Common tools that may help promote deep breathing and offer distraction include a pinwheel or bubble blowing (Figure 8).

Hypnosis

Hypnotic techniques, such as ‘the magic glove’ (50), also reduce the pain and distress associated with needle procedures (41,42). However, this intriguing technique requires specialized training and may not be suitable for busy or noisy environments (e.g., emergency departments).

Music therapy

Music therapy appears to reduce distress and pain in some children undergoing acute painful procedures (44,51). Further studies are required to determine which interventions are most beneficial, which age groups are likeliest to benefit, and whether it is preferable to offer music chosen by patients or preselected by a music therapist.

Pharmacological interventions

Needle procedures

Topical local anaesthetic creams are effective for venipuncture, IV cannulation, LP, and immunization (Figure 9) (5,9,20,52–54) but do not seem to be effective for heel lancing (52). Liposomal lidocaine (Maxilene) has been shown to be an effective topical anaesthetic for IV procedures (55–57), with shorter procedure times for IV cannulations and higher success rates on first attempts (58). For venipuncture and cannulation, amethocaine (Ametop) is reported to be more effective than lidocaine-prilocaine (EMLA) in reducing pain, although both show effectiveness (59). The main advantage of amethocaine and liposomal lidocaine creams is earlier onset of action compared with lidocaine-prilocaine (Table 1) (53,55–64). Furthermore, reported cases of methemoglobinemia in infants with the lidocaine/prilocaine cream appear to be mainly related to the prilocaine component, which is not present in the faster acting creams (60). Also, according to the manufacturer’s directions, occlusive dressings over liposomal lidocaine are not mandatory. When patients are stable enough to wait 30 minutes, using either amethocaine or liposomal lidocaine



Figure 9. Cream application.

before needle procedures is recommended, especially when combined with other physical and psychological strategies (15,17,18,42).

Other novel, immediately effective interventions, such as vibration/cold devices (e.g., Buzzy) or a needle-free jet injection of 1% buffered lidocaine (J-Tip) are promising options for alleviating pain during IV procedures (65–69) or LPs (70,71). Studies of these devices are limited, however, and neither was available in Canada at time of publication. Vapocoolant sprays (e.g., Pain Ease) may be an alternative to anaesthetic creams. They have been shown to reduce pain during IV cannulation without increasing procedural difficulty (72,73). Their main advantage is immediate effectiveness, but duration of action is limited (Table 1). They can cause mild discomfort upon application (a cold sensation) (72), which limits usefulness in younger children who cannot understand the feeling or what to expect (1).

For patients who remain distressed following the use of combination strategies described here, analgesia and mild sedation can be achieved using agents such as nitrous oxide, in a premixed formulation of 50% nitrous oxide to 50% oxygen (Figures 10 and 11) (74,75). Nitrous oxide is easy and safe to administer in cooperative children (usually ≥ 3 years old), with a rapid onset and offset of action (76–80). Adding nitrous oxide to EMLA was demonstrated to provide superior analgesia in children compared with each strategy alone (74,81,82) and specifically for venous cannulation (83). Sedation for medical procedures, despite its safety when performed by trained personnel, should only be provided by clinicians with appropriate training, adequate staffing, proper equipment, access to appropriate medication and reversal agents, and monitoring (For online training, visit: [https://train.ziergroup.com/.](https://train.ziergroup.com/))

LP

Topical local anaesthetic creams (e.g., EMLA, Maxilene) and injected lidocaine have been used to successfully manage pain during LP (84,85) and to improve procedural success (86). Nevertheless, oligoanalgesia (the under-treatment of pain) for LP in infants and children is frequently reported (84,87). For nonurgent LP, topical local anaesthetic should be administered first, followed by injected lidocaine to achieve deeper tissue anaesthetic. When urgency does not permit applying cream, about 1 mL of injected 1% lidocaine without epinephrine should still be used. Oral sucrose for infants can be added, and nitrous oxide can be a helpful adjunct for older patients (88,89). For some children, procedural sedation is required to perform the procedure.

Table 1. Topical anaesthetics before needle procedures on intact skin

Active ingredient (trade name)	Amide anaesthetics		Ester anaesthetic	
	Lidocaine - prilocaine 5% (EMLA)	Liposomal lidocaine 4% (Maxilene)	Amethocaine 4% / Tetracaine (Ametop)	Pentafluoropropane Tetrafluoroethane Vapocoolant spray (Pain Ease)
Onset	60 min (increased dermal analgesia with up to 2 h of occlusion)	30 min	30 min	Immediate
Maximal application time	Max 4 h in children Max 1 h in ≤3 months (Max application area of 10 cm ²)	Max 2 h (Max application area 100 cm ² in <10 kg)	Studied up to 60 min (Max dose 50 mg)	Spray 10 s or until blanching (Max use twice at the same site)
Duration of efficacy after removal	Up to 1–2 h (efficacy increases up to 15–60 min after removal)	Longer than EMLA (efficacy increases up to 30 min after removal)	4 h	45–60 s
Advantages	No cross-sensitivity with Ametop	Rapid action Occlusion not required No cross-sensitivity with Ametop	Rapid action Superior to EMLA No cross-sensitivity with lidocaine	Immediate
Side effects	Vasoconstriction Methemoglobinemia (increased if <1-year-old) Hypersensitivity (rare)	Methemoglobinemia (rare)	Hypersensitivity	Burning sensation Frostbite
Contraindications	Allergy, application on mucosae or an open wound or in eyes, methemoglobinemia, G6PD. Use cautiously with heart block or severe hepatic disorder	Allergy, application on mucosae or an open wound or in eyes. Use cautiously with heart block or severe hepatic disorder	Allergy (including PABA and sulfonamides), application on mucosae or an open wound or in eyes	<3 years of age, hypersensitivity, application on mucosae or an open wound

Data drawn from references (S9–64).

G6PD *Glucose-6-phosphate dehydrogenase deficiency*; PABA *Para-aminobenzoic acid*.



Figure 10. Distraction and nitrous oxide.



Figure 11. Nitrous oxide administration.

Urine collection

Novel clean catch methods are being increasingly used as non-painful alternatives to urethral catheterization in nontilet trained children (e.g., see <https://babyology.com.au/health/baby-health/wee-search-theres-better-way-get-urine-sample-babies.html> [90–93]). For additional technical guidance, see: <http://www.urgencehsj.ca/savoirs/prelevement-durine-clean-catch-chez-la-fille-md/> (94). Studies of methods involving bladder stimulation using gentle tapping or cold \pm paravertebral massage manoeuvres found increased procedural success rates in infants, with a reported contamination rate of approximately 15% (92).

More invasive ways to collect sterile urine include urethral catheterization and suprapubic aspiration (SPA). Simultaneous

use of both topical and intraurethral 2% lidocaine gel do not seem to consistently improve urethral catheterization-associated pain management in children <2 years old (95–97). Sucrose appears to have some analgesic effect in neonates but not always in older infants (98). While lidocaine might appear to be an intuitive option to reduce pain for urethral catheterization, further studies to determine utility are needed because lidocaine does not appear to add benefit when compared with nonanaesthetic lubricants (95,99).

SPA is considered the ‘gold standard’ for obtaining sterile urine samples but also appears to be the most painful approach (100–102), even after a topical anaesthetic is applied (100). Topical anaesthetic creams have been shown to reduce pain associated with SPA, but because most infants still experience pain, combining analgesia with other strategies is recommended whenever this procedure is performed (103). Point-of-care ultrasound can also be used before SPA to confirm presence of urine and to avoid unsuccessful or ‘dry’ aspirations.

Nasogastric (NG) tube insertion

There is evidence for the efficacy of using oral sweet solutions in newborns to reduce pain before gastric tube insertion (104). Sitting upright for NG tube placement in adults is common, along with offering water through a straw during the procedure. Both strategies may be helpful for children as well (105). The adult medical literature also supports administering topical lidocaine before NG tube insertion (106–108). Many modes of administration have been studied, including nebulized, atomized (spray), and topical lidocaine jelly, alone and in combination (106–108). In the only trial in children (1 to 5 years old), nebulized 2% lidocaine did not reduce pain or distress at NG tube insertion but nebulized administration did increase distress (109). However, extrapolating from the adult literature, some clinicians have chosen to introduce atomized 4% lidocaine or 1–2% of lidocaine jelly for children (26,107).

Laceration repair

Topical anaesthetics such as LET gel (lidocaine 4%/epinephrine 0.1%/tetracaine 0.5%) are recommended to reduce pain from a minor laceration before wound closure with sutures. Application should also be considered before any tissue adhesive procedure because wound cleaning, examination, and closure are facilitated with better pain management. LET is effective in 30 minutes (1,9,110) and helps achieve wound hemostasis (110). LET is contraindicated for patients <3 months

old, on mucosal surfaces and in large, deep, or contaminated wounds.

Tissue adhesives (glues) are an acceptable alternative to sutures for the repair of simple, clean traumatic lacerations on tension-free surfaces (111) and reduce both procedure times and pain. Sterile adhesive strips can enhance reinforcement and mitigate the slightly increased rates of dehiscence. There is no difference in short- or long-term cosmetic outcome compared with sutures (112).

When sutures are required, prioritize absorbable sutures to avoid distress caused by suture removal (1,9,112). Absorbable sutures are at least as good as nonabsorbable sutures for long-term cosmetic outcomes and infection rate when used in areas of low tension (1,113,114).

When LET gel is not sufficient to manage pain or a repair is urgent, local infiltration with lidocaine or a nerve block should be performed before suturing. To reduce injection pain, bicarbonate can be added to the lidocaine in a 1:10 volume ratio. The injection solution can be warmed to body temperature and should be injected slowly, using a small gauge needle (27 G to 30 G) (1,115,116).

In addition to combined pain management strategies, some children still require short-acting anxiolysis or sedation to alleviate distress and minimize movement (e.g., intranasal [IN] midazolam [117], nitrous oxide). A few studies have looked at the efficacy of IN sedation for laceration repair (118,119). Further research is required to determine the optimal doses of IN midazolam, ketamine, and dexmedetomidine to minimize distress during different minor procedures.

Radiograph for suspected fracture or dislocation

When a fracture or a dislocation injury is suspected, analgesia combined with immobilization and icing should be provided before x-ray. Radiography is known to cause significant pain (120). Ibuprofen appears to be superior to acetaminophen for alleviating pain associated with musculoskeletal injuries and equivalent to oral morphine (121,122). For moderate-to-severe pain, IN fentanyl appears promising because it can be quickly administered and acts rapidly (Figure 12). IN fentanyl has been studied in the context of injuries in children (123,124). Doses of 1 mcg/kg to 2 mcg/kg are recommended (to a maximum of 100 mcg). Monitoring after use of IN fentanyl should follow IV opioid guidelines because their systemic effects are similar (123).

RECOMMENDATIONS FOR PHYSICIANS

Table 2 summarizes evidence-based strategies for common, minor but painful procedures. They can and should be used in combination to optimize health care outcomes and experiences.

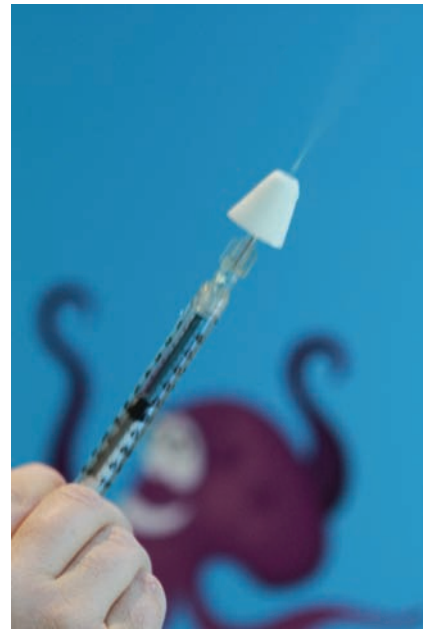


Figure 12. IN fentanyl using atomizer.

RECOMMENDATIONS FOR HEALTH ADMINISTRATORS

The full implementation of evidence-based pain management strategies requires that multiple knowledge translation strategies be in play, supported by institutional policies and education, guideline development, child- and family-friendly environments, trained staff, unit leadership, and quality control audits (125). Having sufficient human resources, appropriate equipment, and recommended pharmacological agents readily available is also essential. When there is institutional interest in standardizing pain management, associations such as ChildKind International (<http://childkindinternational.org/>) can help.

Health care policy development should reflect commitment to pain prevention and relief at every level, with standing orders for nurses to use (for example) sucrose in all clinical settings (1) and apply topical anaesthetic for selected ED patients (1,5,9,53). Children's Healthcare Canada (formerly the Canadian Association of Paediatric Health Centres) has a series of toolkits to aid administrators and clinicians with policy change (<https://ken.childrenshealthcarecanada.ca/xwiki/bin/view/Paediatric+Pain/Acute+Procedural+Pain%3A+Paediatric+Recommendations+and+Implementation+Toolkits>).

Patients, caregivers, and staff should have ready access to educational resources on pain management strategies. Practical, evidence-based summary sheets for procedural pain can be found at TREKK.ca.

Staffing levels and training must be sufficient to support adequate pain management. A child life specialist can help caregivers and health care providers to develop coping plans using

Table 2. Evidence-based approaches to pain management for minor procedures

Procedures	Physical	Psychological	Breastfeeding or sucrose	Pharmacological*	Special considerations
	<ul style="list-style-type: none"> Infants: <ul style="list-style-type: none"> -Pacifier -Swaddling -Tucking -Skin to skin (kangaroo) care Children: <ul style="list-style-type: none"> -Sitting upright 	<ul style="list-style-type: none"> -Parental presence -Age-appropriate preparation -Distraction: <ul style="list-style-type: none"> May involve parents Involve child life therapist, if available -Deep breathing -Consider hypnosis -Consider music 	<ul style="list-style-type: none"> Infants <1 month: <ul style="list-style-type: none"> -Recommended for all Infants 1–12 months: <ul style="list-style-type: none"> -Suggested for all 	<ul style="list-style-type: none"> -Topical -Infiltrated -Systemic 	<ul style="list-style-type: none"> • Adopt a least-invasive approach, when possible
Needle procedure (IV, IM, capillary)	✓	✓	✓	<ul style="list-style-type: none"> • Topical anaesthetic 	<ul style="list-style-type: none"> • Reduces heel lances • Consider faster acting creams • Group blood drawings, when possible • Consider adjunct with nitrous oxide for persisting distress • Consider sedation as an adjunct when indicated (e.g, nitrous oxide)
Lumbar puncture (LP)	✓	✓	✓	<ul style="list-style-type: none"> • Topical and/or infiltrated anaesthetic 	<ul style="list-style-type: none"> • Consider sedation as an adjunct when indicated (e.g, nitrous oxide)
Urine collection in infants	✓	✓	✓	<ul style="list-style-type: none"> • Further studies required on lidocaine use for catheterization • Anaesthetic cream before SPA 	<ul style="list-style-type: none"> • Consider ‘clean catch’ methods • Catheterization is less painful than SPA • Anaesthetic cream must be combined with other strategies for SPA
Nasogastric tube insertion	✓	✓	✓	<ul style="list-style-type: none"> • Topical lidocaine (gel, spray) effective in adults 	<ul style="list-style-type: none"> • If age- and situation-appropriate, consider having child swallow water through a straw during insertion • Avoid nebulized lidocaine in children: it can cause distress

*When no contraindication is present. *IM* Intramuscular; *IV* Intravenous; *SPA* Suprapubic aspiration.

Table 2. Continued

Procedures	Physical	Psychological	Breastfeeding or sucrose	Pharmacological*	Special considerations
	Infants: -Pacifier -Swaddling -Tucking -Skin to skin (kangaroo) care Children: -Sitting upright	-Parental presence -Age-appropriate preparation -Distraction: May involve parents Involve child life therapist, if available -Deep breathing -Consider hypnosis -Consider music	-Topical -Infiltrated -Systemic	-Adopt a least-invasive approach, when possible	
Laceration repair		✔	-Recommended for all Infants 1–12 months: -Suggested for all	• LET gel on arrival • ± infiltrated anaesthetic: add bicarbonate, warmed solution, slow injection, small needle	• Use tissue adhesive (glue), when appropriate • Reinforce with sterile adhesive strips • Use absorbable sutures, when appropriate • Use sedation as an adjunct, when persisting distress
X-ray for suspected fracture or dislocation		✔	According to pain level or pain when mobilized: o If mild-to-moderate: Oral ibuprofen ± acetaminophen o If moderate-to-severe: add IN fentanyl		

*When no contraindication is present.
 IM Intramuscular; IV Intravenous; SPA Suprapubic aspiration.

therapeutic play and family support (1,126,127). When children do not respond to first-line strategies, specialized teams and provisions to consider a procedural sedation should be deployed. Resource allocation must permit the use of combined strategies within one or (potentially) more care centres or departments at a time, to minimize cost (34,48,112).

Finally, failure to follow standard pain management procedures should be treated as a patient safety-related event. Reporting untreated or under-treated pain as an adverse event, and viewing it from a quality lens, could inform and encourage institutional change.

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