10 Things to know to Reduce Pediatric Pain

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I have no relevant financial relationships to disclose.
Objectives

- Utilize pain assessment tools recommended by the American Academy of Pediatrics
- Develop an evidence-based approach to treating pediatric pain
- Recognize the effects of inadequate pain treatment
Clinical Scenario

■ A 4 year old is brought into your urgent care by her babysitter after falling off the monkey bars
■ She is crying and holding her right arm against her body
■ Quickly glancing at it, you think it looks slightly deformed

All this time, the babysitter is also crying, mumbling how she’s going to be in so much trouble, and pleading “Just do something to help her feel better!!!”

Have no fear, you say. I can help her feel better!
Give that girl Ibuprofen!

I'll just start with an ice pack.

Put an IV in and give her morphine!

Wait, does she need an IV? Won’t that hurt?

Or should I give Tylenol?

Or would a warm pack be better?

AHHHHHH!!!!! I DON’T KNOW!!!!!

Actually, should I keep her NPO?

She needs something strong, give her Roxicodone!
Confusion and Misunderstanding → Poor Treatment

- Schecter, Pediatrics 1986
  - Adults received 2x the narcotics of children

- Selbst, Annals of EM 1990
  - Patients in pain who received pain medications
    - Kids: 28%, Adults: 60%
    - <2yo: 20%, >2yo 49%, Adults: 76% - received meds at discharge

- Friedland, Annals of EM 1994
  - Only 53% of children with any injury received pain meds in ED

  - Fractures: Pain meds given 29% in Very young (< 2yo) vs 51% in school age (6-10yo)
  - Burns: Pain meds given 50% in very young (<2yo) vs 75% in school age (6-10yo)
Step #1 to Reducing Pain

RECOGNIZE PAIN!!!
What Makes for Good Pain Management?

- Assessment
- Re-assessment
- Patient driven
- Effective
- Cost-effective
- Culturally Appropriate
- Developmentally Appropriate
- Safe
- Accessible
Treatment:
AAP Policy on Assessment and Management of Acute Pain in Infants, Children, and Adolescents, Pediatrics, 2001 (revised 2012)

- **Pain** with acute illness should be addressed. Types of treatment are determined by the severity of the pain and by the particular illness and situation. Pharmacologic intervention may include the use of acetaminophen, NSAIDs, opioids, and locally applied medications. As with other situations that involve pain, nonpharmacologic treatment, such as distraction, relaxation, and physical therapies, also can be used effectively in conjunction with medications.
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Identification...check.
Management...

- Medications
  - Oral
  - IV
  - Rectal
  - Intranasal
  - Topical

- Adjuncts
  - Distraction
  - Physical Therapy
  - Relaxation
  - Homeopathic (acupuncture, healing touch, massage)
Case 1

- 4 day old infant presents to your Emergency Department for jaundice and poor intake

- Mother states her breast milk has yet to come in, and today patient has now been more somnolent and had no wet diapers in 16 hours

- You ask your nurse to get heel stick for and iStat with lytes and bilirubin and to place an IV to give a bolus

What could possibly help with these painful procedures?
#2: Sucrose

- Exact Mechanism Unknown
- Cochrane Review
  - *Heel Stick* with oral sucrose (0.5 – 5mL of 24% sucrose 2 min before)
    - Decreased Premature Infant Pain Profile (PIPP) score
    - Decreased crying time
  - *Bladder catheterization* in neonates with oral sucrose
    - Decreased pain scores
    - Lower likelihood to cry
    - More rapid return to baseline after procedure
  - *Venipuncture* in children < 1 with oral sucrose
    - Shorter duration of crying
#3: Breast Feeding

- Utilizes behavioral modification (sucking)

- Breast milk contains higher tryptophan levels than formula

- Breast Feeding vs Pacifier or Sucrose or Placebo with IV or heel stick in neonates
  - Decreased pain scores
  - Shorter crying time
  - Less heart rate increase
#4: Practice Modification Considerations

- Venipuncture over heel lance
- Buffering lidocaine
  - 1 mL HCO3 in 9 mL Lidocaine
Case 2

- 16yo female with sickle cell disease presents with extremity pain – consistent with her normal vaso-occlusive pain crisis
- You plan to place and IV to get labs and give a bolus

Your patient states that she HATES getting IVs and asks if there is anything you can do to numb her skin before the IV?
#5: Topical Anesthetics

- Equally efficacious to intradermal injected lidocaine
- **Amethocaine > Tetracaine > Lidocaine-Prilocaine (EMLA)**
- Liposomal Lidocaine (Maxilene, LMX)
  - Equally efficacious to Tetracaine
- J-tip (Jet injected Lidocaine)
  - 0.2mL of 1% buffered Lidocaine
  - J-tip > Topical anesthetic for IV placement in age 1 - 19yrs old
  - Decreased cry time in infant lumbar punctures
- EMLA or LET
  - Equally efficacious for laceration repairs
- Vapocoolants
  - More efficacious than ice for IV insertion

**Risks to Consider:**
- EMLA – methemoglobinemia
  - Limit to 2 grams
  - Infants > 3 months or 5kg
Case 3

Liam just turned 1 years old. He was so excited to be at his 1 year well child check, and his father was also excited to hear “Everything is Perfect,” until you bring up the word.....

S-H-O-T-S

Is there any way to reduce this anxiety?

Distraction?
#6: Non-Pharmacologic Strategies

- **Contextual Modifications**
  - Parental Presence can reduce pain – no effect on procedure success rate

- **Psychological Therapies**
  - Distraction – decreases pain with venipuncture, IVs, and immunizations

- **Behavioral Modifications**
  - Sucking (pacifier or breast), swaddling, swaying reduce pain in neonates with heel lance and IV starts
  - Buzzy pain reliever
Case 4

One evening when you are on call for your practice, you receive a call from one of your patient’s mother, frantically telling you....

Hi Dr. Jensen. Jeremy and his brother were jumping on the bed, and Theo pushed him, and he hit his forehead on the headboard, and now has a big cut!

Ms. Hanson, it sound’s like he’s going to need stitches. I would recommend taking him to the ER.

I know. I’m just afraid stitches are going to hurt so bad.
#7: Tissue Adhesives

**Benefits:**
- Decreased pain scores compared to standard suturing
- Decreased procedure time
- No follow up required
- No cosmetic difference at 1 and 12 months post closure

**Limitations:**
- Simple
- Linear
- Low Tension
Room 4 is a 14yo female with what sounds like a migraine headache. I was going to give her Tylenol, but wasn’t sure about that?

Room 1 is a 2yo with an acute otitis on the left side. I was thinking of giving ibuprofen for her pain?

Room 4 is a 14yo female with what sounds like a migraine headache. I was going to give her Tylenol, but wasn’t sure about that?

And in Room 7 is a 13yo male whose XR looks like a radius buckle fracture. Was planning on trying a removable splint. Does he need something stronger than ibuprofen for pain?

Case 5

Your very eager and astute intern comes to present to you one afternoon while you’re supervising the Urgent Care and says, “I have 3 patients to staff with you.”
#8: Oral Medications

- Tylenol and NSAIDS
  - Migraines: equally efficacious
  - Otitis: equally efficacious

- Opioids
  - Fractures: can be used in addition to ibuprofen
Case 6

A 14 year old female presents to your office with severe abdominal pain and vomiting. You are concerned about appendicitis and arrange transfer to your closest hospital. You want to give her something for pain. You ask the resident shadowing you for the day...

What? Surgeons? In this show we are the pediatrician, surgeon, anesthesiologist, and radiologist. So give the morphine.

Please write for a dose of IV morphine.

But aren’t the surgeons going to get mad that we masked the pain with pain meds before they could evaluate the patient?

Also, we can’t see each other any more...
#9: Intravenous Medications

  - Showed no diagnostic inaccuracy of acute abdominal pain after analgesia or morphine is given
Back to the Initial Clinical Scenario

Your scratching your head deciding what to give that 4yo female who fell off the monkey bars and is crying non-stop. The babysitter is just asking for something to help quickly!

Got it. We’ll give an intranasal medication. But which one?
#10: Intranasal Medications

Ketamine or Fentanyl?


- Used 1.5ug/kg of Fentanyl or 1.5mg/kg Ketamine IN for extremity fractures
- Similar pain reduction at 15, 30, and 60min post administration
- Increased adverse events with Ketamine
Summary

■ Pain in children is often under recognized and under treated
  ➔ Consider with any case!

■ Remember your options
  - Topical
  - Oral
  - Intravenous
  - Intranasal
  - Distraction!
References


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