Acute Pain Management

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Project ECHO®

Disclosure

Faculty: Heather Cary

Relationships with commercial interests: None

This program has received financial support from the Ministry of Health (MOH)

Special thanks to Dr Sasha Litwin

Learning Objectives

Consider pain assessment

Explore approaches to acute pain management

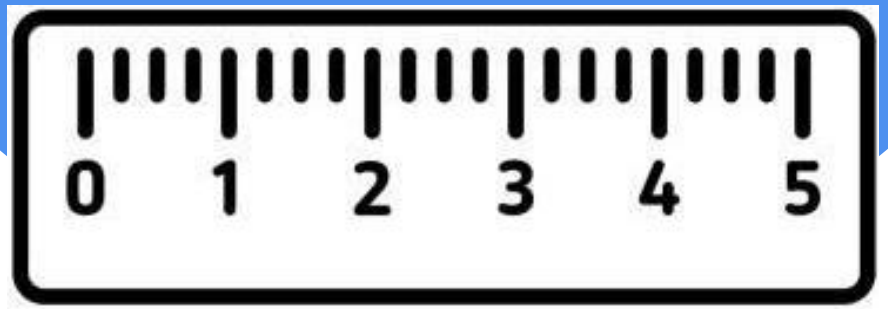
Apply approaches to clinical cases

Why should we care about pain in the ED?

- Pain is the reason for the majority of healthcare visits
- Untreated pain has short-term and long-term consequences
- Timely and effective multi-modal pain care
  - Improves procedure success rates
  - Prevents need for repeated attempts
  - Improves patient flow
  - Improves patient and caregiver satisfaction

Pain Assessment

How can me measure pain?



Case 1

6yo Adam is attending with his mum with 2 days of central abdominal pain now radiating to his RIF. He vomited twice at home.

He is previously well, no medications, no allergies and vaccines UTD.

He is sitting on the bed distracted by a tablet.

Case 1

- What features might affect how this child
  - Interprets pain
  - Expresses pain
  - Reports pain
- What features might affect how you
  - Interpret the child's pain
  - Treat the child's pain

Culture and pain expression

Latimer et al 2020

- Indigenous children and youth exhibit a learned pain behaviour of hiding their pain from adults to appear stoic.
- Canadian Indigenous children report difficulty describing their pain, which may be both due to language and cultural differences

How does this interact with your own culture?

Gender and pain expression

- There is gender bias in the assessment of pain.
- Boys are described as experiencing more pain than girls, despite identical clinical circumstances and pain behaviours (Earp et al., 2019).
- The gender of the physician influences pain management decisions in the ED. Female physicians are more likely to administer pain medicine than male physician.
- Female physicians are more likely to administer opioids to female patients and male physicians are more likely to administer opioids to male patients (Safdar et al., 2009).

Case 1

What shall we give Adam?

- Acetaminophen/ibuprofen
- PO or IV morphine
- Antiemetics

Pain assessment tools

Use validated pain scales

Whenever possible, children should be asked to rate their pain using validated, self-reported measures (Birnie 2019)

Scale	Use
FLACC – Faces, legs, arms, consolability, cry scale	<4y, developmental delay, non-verbal Observational
FPS-R – Faces pain scale revised	4-12 Observational
vNRS – Verbal numerical rating scale	>6y Self report

FLACC Scale - <4, non-verbal

Document the total pain score.

- 0 = relaxed and comfortable
- 1-3 = moderate discomfort
- 4-6 = moderate pain
- 7-10 = severe pain or discomfort or both

Categories	0	1	2
Face expression	No special expression	Slight frowning, grimace	Mop, teeth clenching
Legs	Normal position	Tight, stressful	Kick at anybody
Activity	Calm	Turn around	Hop off, jerk
Cry	No cry	Groan, moaning	Shouting cry, with screams
Consolability	Relaxed	Consoled with hug or touch	Never consoled

FLACC=Face, leg, activity, cry, consolability

Faces Pain Scale – 4-12y

- “These faces show how much something can hurt. This face [point to left-most face] shows no pain. The faces show more and more pain [point to each from left to right] up to this one. [point to right-most face] It shows very much pain. Point to the face that shows how much you hurt [right now].”
- Score the chosen face 0, 2, 4, 6, 8, or 10, counting left to right, so "0" equals "No pain" and "10" equals "Very much pain."
- Use the words "Hurt" or "Pain," whichever seems right for a particular child. Do not use words like "happy" and '"sad." This scale is intended to measure how children feel inside, not how their face looks. (https://www.iasp-pain.org/resources/faces-pain-scale-revised/)

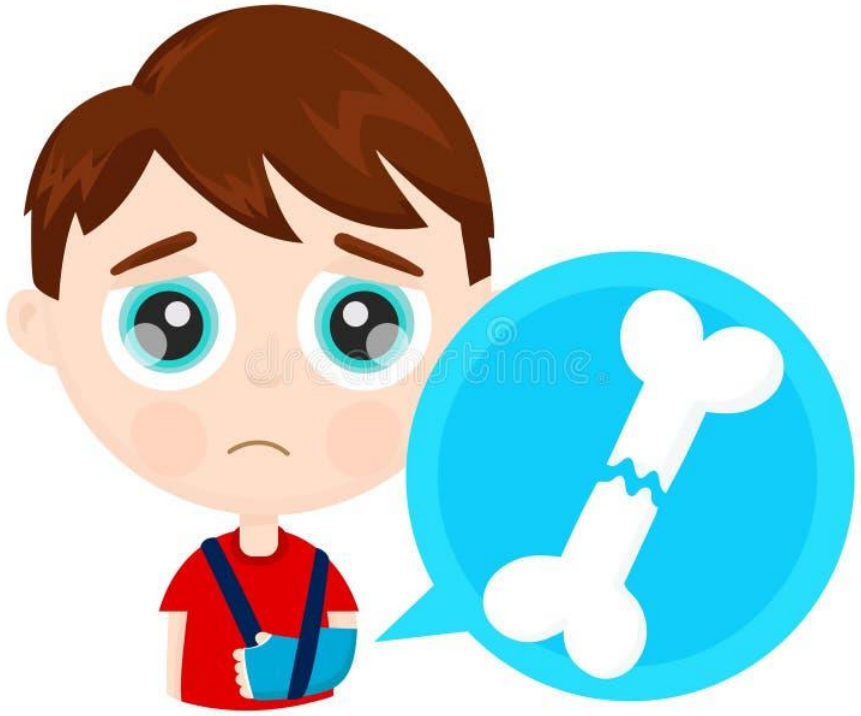
Verbal Numerical Rating Scale – >6y

- For children over 6 years of age, use the Verbal Numerical Rating Score (vNRS) (Tsze et al., 2018)
- "On a scale from zero to ten, where zero means no pain and ten means the most or worst pain that you have experienced, how much pain do you have right now?"
- Categories of pain severity:
  - no pain = 0
  - mild pain = 1–3
  - moderate pain = 4–6
  - severe pain = 7–10

Case 2

5yo Rory has a visible deformity of his forearm. He is finding it hard to use words.

What pain scale would be best for Rory?



Pain Management

Approaches to Pain Management

PHYSICAL

PSYCHOLOGICAL

PHARMACOLOGICAL

Physical

Caregiver stays with child

Comfort position (e.g. in caregiver arms)

Sucking on a soother or BF

Burrito

Cuddling, gentle touch, skin-to-skin

Warm or cold packs

Deep breathing

Psychological - Distraction

Dependent on age and stage

Involve child life

Infants

- Music, keys, sucrose, heat

Young children

- Bubbles, games, eye spy, videos, music and singing, fidget toys

Older children

- Books, music, videos, virtual reality (VR), games on a tablet or smart phone

Autism Spectrum Disorder

- Take an individual approach - likely calm, quiet environment with sensory items

Autism specific interventions

Oral Sucrose

- Oral Sucrose can be used for infants < 12 months but works best in children < 1 month
- Give 2 mL of 24% glucose solution orally using a syringe or on a pacifier, 2 minutes before initiating the painful procedure.
- If 24% glucose is unavailable, dilute D50W with 1:1 equal parts sterile water to create D25W as a substitute.
- Oral sucrose can be used alone or in combination with other techniques for all painful procedures in this age group (TREKK Bottom Line Recommendations 2021).

Pharmacological

- Topical
- Oral
- Intravenous
- Intranasal
- Procedural sedation

Topical

- IV line
  - Emla, Amethocaine 4% gel (Ametop), Liposomal Lidocaine 4% (LMX-4, Maxilene, ELA-Max, Zensa), cooling spray, J-tip with buffered lidocaine (Zingo)
- LP
  - Emla patch
- Laceration
  - LET
- Finger dislocation/fracture
  - Zensa followed by digital block

Case 3

4yo Blessing has sickle cell HbSS and is presenting with her mum with a 1 day history of leg pain.

What approach will we take to managing her pain?

- Heating packs, distraction, child life
- PO acetaminophen and ibuprofen
- PO morphine or hydromorph
- IV bolus of morphine, hydromorph or fentanyl
- IV infusion of morphine or hydromorph

TREKK dosing

ANALGESICS FOR CHILDREN 1 YEAR AND OLDER		
MILD PAIN (e.g. 1-3 out of 10)		
Drug	**Dose**	**Comments/Precautions**
Ibuprofen PO	10 mg/kg/dose q6h PRN (MAX 600 mg/dose)	First-line option for musculoskeletal injuries and most other painful inflammatory conditions.
Acetaminophen PO	15 mg/kg/dose q4h PRN (MAX 1000 mg/dose)	Do not exceed the lesser of 75 mg/kg/day or 4 g/day.
MODERATE PAIN (e.g. 4-6 out of 10)		
Ibuprofen AND Acetaminophen PO	Dosing as for Mild Pain section above	
*Consider **adding** an opioid.*		
Hydromorphone PO (tablets, liquid)	0.03-0.06 mg/kg/dose q3-4h PRN (MAX 1-2 mg/dose)	Higher risk of dosing errors. Possible increased risk of future misuse/opioid use disorders. Do not use if < 6 years old.
Morphine PO (tablets, liquid)	0.2-0.5 mg/kg/dose q3-4h PRN (MAX 15 mg/dose)	Most common pediatric opioid. Lack of demonstrated efficacy for musculoskeletal pain. For **initial** pain management, 2nd dose may be given sooner than 3 hrs.
Oxycodone PO (tablets)	0.1-0.2 mg/kg/dose q4-6h PRN (MAX 5-10 mg/dose)	Risk of QT interval prolongation. Tablets must be swallowed whole.
If not responding to PO opioid, consider lower dose IV/intranasal opioid (see Severe Pain below)		
SEVERE PAIN (e.g. 7-10 out of 10)		
Fentanyl Intranasal	1.5 mcg/kg/dose (MAX 100 mcg/dose) May repeat 0.5-1 mcg/kg/dose (MAX 50 mcg/dose) 10 min after 1st dose if needed. Divide dose between nostrils (MAX 1 mL/nostril).	Provides rapid pain reduction. Provides early pain relief if IV access is not yet established. Give via mucosal atomization device for enhanced absorption. Monitor level of consciousness, vital signs, and pain score prior to therapy and at 10 min post administration.
Morphine IV	0.05-0.1 mg/kg/dose q2-4h PRN (MAX 5-7.5 mg/dose)	Monitor level of consciousness, vital signs, and pain score prior to therapy and q10 min post administration (for MIN 30 min). Some institutions recommend continuous O_2 sat monitoring for 30 min post administration. For **initial** pain management, 2nd dose may be given sooner than 2 hrs.
Fentanyl IV	1 mcg/kg/dose q1-2h PRN (MAX 50 mcg/dose)	Monitoring as per Morphine IV above. For **initial** pain management, 2nd dose may be given sooner than 1 hr.
Always add PO or IV NSAID for opioid-sparing effect if the pain is expected to require multiple opioid doses.		
Ibuprofen PO	Dosing as for Mild Pain section above	
Ketorolac IV	0.5 mg/kg/dose q6h PRN (MAX 30 mg/dose)	Avoid ibuprofen or other NSAIDs for at least 6 hours after IV ketorolac.

Racial and cultural stereotypes

- Racial and cultural stereotypes affect how clinicians treat patients with pain.
- In one study, over half of white medical students and residents falsely believed that there are biological differences between black and white patients' pain perception (Johnson 2013).
- In several studies, black patients were less likely to be given pain medicine than white patients when presenting with similar painful conditions, and when they were given pain medicine, they were given lower doses (Hoffman et al., 2016).
- Pediatric research shows conflicting results on the racial differences in pain treatment.
    - In a systematic review, one study reported no racial differences in pain medication administered in the emergency department for children with fractures (Yen et al., 2003), while other studies reported that African American and Latinx children received significantly less pain medications than Caucasian children for the same types of painful conditions.

Case 3

Discharging patients on opioids

- No more than 3 days (or 10 doses total) for most outpatient conditions.
- Recommend stool softener
- All families should have an opioid risk assessment performed before prescribing outpatient opioids.
- Opioids should be stored safely out of reach and only given as needed. Unused quantities of any medication should be returned to the pharmacy for safe disposal.

Case 4

8yo Jenny presents with left wrist injury after falling off the play structure

What approach can we take?

- Splint in position of comfort
- IN fentanyl
- Nitrous oxide
- Procedural sedation
    - IV ketamine +/- IV propofol

Case 5

5yo James presents after bleach splashed in his eye

- Initial pH of 10

How can we facilitate eye irrigation?

- IM ketamine (typically 2-4mg/kg)

Case 6

15yo Sameen is in the trauma bay after a high speed MVC. She only speaks Farsi.

What can we do for her pain?

- Translation services
- IV fentanyl in 1mcg/kg aliquots

Language barriers and pain management

It can be more difficult to properly assess and treat pain for patients and families where English or French is not their first language.

Spanish-speaking Latinx children received 30% less opioid analgesics post-operatively than English-speaking Caucasian children (Kristjansdottir et al., 2012; Hostetler et al., 2002; Jimenez et al., 2010).

Language and sign language interpreters are available by phone/virtually in many centres and can dramatically improve communication regarding pain assessment, treatments and to provide education on pain management after discharge from the ED.

Tips for counselling caregivers

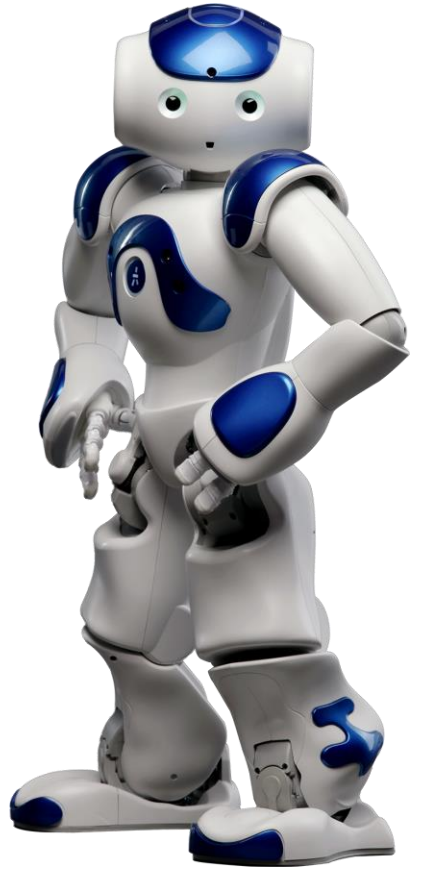
- Common questions:
  - Is it safe to give pain medications to my child?
  - How will the medicine affect my child?
  - What are the potential adverse effects?
  - Is a risk of later addiction or dependence?
  - Are these medications (Fentanyl, Ketamine) the same as “street drugs”?

- When counselling caregivers, clinicians can emphasize:
  - It is important to treat pain even before the cause of the pain is diagnosed
  - Treating pain will not mask a dangerous condition
  - Untreated pain can have long term consequences for their child and cause fear and anxiety with procedures and medical encounters later in life
  - We start with pain medicines that have the fewest side effects and add stronger medications when and if they are needed
  - If opioid medications are needed because their child has severe pain, the dose will be carefully tailored to the child’s weight and level of pain

What's next?

New technologies

- Movies
- Video games
- Social media
- Virtual reality
- Robots?



Questions?