Pediatric Trauma Care

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Introduction

• Focus on how we do things vs What we’re trying to achieve
• Goal:
  - Effective pain control vs
  - Creation of positive experience for child and family

Why Focus on Pain in Children?

• Right thing to do/ Quality of care
• Patient and family satisfier
• Staff satisfier
• Demonstrates caring and compassion
• Reduce medical legal risk
• Reputation for excellence in community

“The Challenge”

4 year old ran into a door, and has 2 cm laceration to the scalp.
7 year old fell off the monkey bars and has a deformity to the forearm.

Child, Parents and Staff are all very anxious about how things will go....

“Institute of Medicine Report
National Academy of Sciences  2006 Report
Future of Emergency Care: Emergency Care for Children Growing Pains

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Overview

- Pharmacologic techniques
- Non-pharmacologic techniques
  - Establishing trust
  - Positioning Techniques
  - Preparation for procedures
  - Distraction during procedures
- Integration

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POLICY STATEMENT

Child Life Services
Child Life Council and Committee on Hospital Care

Child life programs have become standard in most large pediatric centers and even on some smaller pediatric inpatient units to address the psychosocial concerns that accompany hospitalization and other health care experiences.

Case Study

- 5 year old with vomiting and diarrhea for 2 days
- vomited x 6 today
- diarrhea x 3 today
- alert, but tired appearing, with mildly dry mucous membranes
- assessed to be mild-moderately dehydrated, requiring IV rehydration
Eutectic Mixture of Lidocaine & Prilocaine (EMLA®)/ 4% Liposomal Lidocaine (Ela-Max®)

- Apply in thick layer over intact skin
- Occlusive dressing
- 30-45 minutes: 4% Liposomal Lidocaine (Ela-Max®)- 1 hour: Eutectic Mixture of Lidocaine & Prilocaine (EMLA®)
- Contraindication: < 1 month old, emergent need for IV access, allergy to amide anesthetics, nonintact skin, recent sulfonamide antibiotic use (EMLA only), methemoglobinemia (EMLA only)

IV Insertion/ Blood Draws

- 4% Liposomal Lidocaine (Ela-Max® 4% cream)
- Eutectic Mixture of Lidocaine & Prilocaine (EMLA®) cream
- EMLA/LMX4/Ela-Max can be placed over at least 2 potential IV sites
- Red Flag: Avoid mucous membrane contact or injection

New Topical Analgesics- Lidocaine 70mg/Tetracaine 70mg (Synera®) Topical Patch

- Patch impregnated with tetracaine and lidocaine
- Opening package causes patch to heat up, decreasing onset time to analgesia
- Works in 20 minutes

The effect of vapocoolant spray on pain due to intravenous cannulation in children: a randomized controlled trial

Analgesia in Infants

- No sudden moves or noises
- Oral sucrose solution
- Pacifier with sucrose

IV Insertion/ Blood Draws, Heal Sticks, Lumbar Puncture

- Young infants
- 24% sucrose (Sweet-Ease®)
- Should be given no more than 2 minutes before the start of the procedure
- Contraindication: avoid if child is NPO
- **Red Flag:** Sucrose should not be used more than twice in one hour
- **Red Flag:** Sucrose is more effective when combined with a pacifier

Minor Head Trauma/ Suturing

Head Injury Concerns

- Parents often anxious
- Vast majority are minor
- Imaging
  - Skull Film
    - Rarely indicated
    - Large hematoma; can’t feel skull
Head Injury Pearls

- Head CT
  - Persistent vomiting
  - Abnormal neurological exam
  - LOC > 5 minutes
  - Altered level of consciousness
  - Not acting right
  - Young infant
  - Radiation concerns; consider observation

Lacerations

- Ask RN to help with preparation of child
- Non-pharmacologic techniques
- LET (Lidocaine-Epi-Tetracaine) Gel
- Buffered lidocaine
- Small needle (27g); inject slowly; wait!

Suturing- LET Gel

- Lidocaine- Epinephrine- Tetracaine
- Best on face and scalp
- Can also be used on neck, extremities and trunk (wounds < 5 cm)
- 30 minute application
- Requires preparation
- Proper use

Suturing - LET Gel

- Contraindications:
  - Allergy to amide analgesics
  - Gross contamination of wound
  - Involvement of mucous membranes, digits, genitalia, ear, nose
- Max Dose = 3ml

Fractures

- Child typically presents with significant pain
- Address pain before getting x-ray!
- Try to gently immobilize extremity if possible prior to x-ray
- Use Morphine, 0.1 mg/kg IV for fracture pain
- Reassess in 5-10 minutes; repeat dosing as needed to achieve analgesia
Options for Sedation

- Must consider:
  - Sedation
  - Analgesia
- Narcotic/ Benzodiazepine combination
- Ketamine

Mild Sedation

- Decrease stimulation
  - Lower lights
  - Reduce noise
- Midazolam (Versed®)
  - IV, 0.05 – 0.1 mg/kg; 2 mg max to start, onset 1-3 minutes
  - Oral, 0.5 mg/kg; 20 mg max; onset 20-30 minutes
  - Nasal, 0.3 mg/kg; 10 mg max; onset 10-15 minutes; may repeat once if needed
  - Note: has no analgesic properties

Focus on Ketamine

- Probable referral, but good to know
- Provides sedation, analgesia, amnesia
- Indications: Fracture reductions, wound/burn debridement, lacerations
- Contraindications:
  - Less than 3 months old
  - Significant respiratory infection
  - Head injury
  - Elevated intracranial pressure and intraocular pressure
- Adverse Effects:
  - Recovery agitation, laryngospasm, vomiting
  - Need to monitor

Discharge Analgesia

- Continuum of good pain management during procedure
- Moderate pain: Ibuprofen, 10 mg/kg
- Severe pain: Acetaminophen (Tylenol®) with codeine (codeine at 1 mg/ kg) or Hydrocodone/APAP (Vicodin®)
- Confirm dosing

Non-pharmacologic Techniques

Establishing Trust

- Don’t separate parent/caregiver
- Parent is foundation of trusting relationships
**Establishing Trust - Language**

- Encourage parent to touch/talk with child
- It’s ok to cry
- Work to minimize duration of crying/restraint
- Offer choices (offers control)
  - positioning
  - watch or look away
  - distractions

**Establishing Trust - Connect**

**Positioning Techniques**

- Depends on developmental age
- Try to avoid restraint
- Help child remain in control
- Engage parent in helping
**Preparation**

- Trust as prerequisite
- Language examples
  - “Don’t move!”
  - Say what **to** do, rather than what **not** to do
  - “Pinch” for IV placement
  - “Straw” for IV; “Helper” for IV needle
  - “Pressure/Pushing” for sutures/staples
- Emphasize feeling of pressure, pulling or touching

**Preparation**

- Explain exactly what will happen
- Show the equipment
- Allow children to watch if they want
Distraction Techniques

- Based on previous techniques
  - Establish trust
  - Decide on pharmacologic agent(s)
  - Decide with parent on best position
  - Prepare child for procedure
  - Then, consider distraction techniques
Integration

- Pharmacologic Techniques
  - Consider alternatives
  - LET Gel
  - Keep up to date (Newer Patch)

- Non-pharmacologic Techniques
  - Establish trust
    - Discuss pharmacologic choices with patient/parent
  - Positioning
  - Preparation
  - Distraction

- Integration Considerations
  - Specific procedure
  - Developmental age of child
  - Discussion with parent/caregiver
  - Urgency of procedure/time constraints
References

- All Pictures: Used with Permission from Petrack Consulting, Inc.