Non-pharmacological Tips

- **Neonate infant**: bundle, kangaroo care, breast-feed, sucrlose + suckling Toddlers: distraction, oral analgesic preparatio, epidural distraction, assist parent on how to be calm - no need of talk or talk above.
- **Sucrose** (Chocolade et al. 1993, best for single painful procedure infant <8 months 1:100, NNHL), distraction. (Admimister <2 minutes prior: 2ml of 25% sucrose solution. Give at least 20ml by oral syringe/drops into mouth, or allow infant to suck from pacifier/breast. OK if NPO)
- **Diet**: feed as normal, if possible.
- **Psychological techniques**: Chocolade et al. 1993, very useful in a quiet environment.
- **Vocal**: crying, screaming, yelling, moaning, whimpering
- **Social**: quietness, irritability, difficult to control
- **Facial**: furrowed brow, grimace, clenched teeth, tightly closed eyes
- **Activity**: less movement, agitated, guarding of a body part
- **Physical**: pallor, sweat, gasping/breathing change, tense/stiff
- **Other**: changes in sleeping & eating patterns

See also FLACC scale: Face/Legs/Activity/Cry/Consolability 1:2:1; Reviews 12:13

Common Challenges in Pediatric Pain

- **Myth**: children do not feel pain as their nervous system is not developed
- **Myth**: Let’s get it over with quickly, he won’t remember, he’s scared
- **Failure to anticipate pain**: (e.g. urethral cath, NG tube, labwork)
- **Failure to assess** or difficulty in assessing pain in very young
- **Fear of masking signs of a more serious etiology**: no adverse event or delay in diagnosis attributed to mild pain analgesia
- **Fear of adverse events & overdose (sedation, respiratory depression)
- **Tendency to underdos**e (lack of parent/caregiver understanding of toxicity; dosage without dose calculation)
- **Transferring**: maintaining pain control from Recovery to Ward to Home

Pain Assessment in Pediatrics

- documenting of pain score associ with 9 analgesic use & 8 Self-report scales 0–10 Numerical up 0 = Faces Pain Scale-Revised 0–10
- Observational scales Observe changes from usual in these cues:
  - Vocal: crying, screaming, yelling, moaning, whimpering
  - Social: quietness, irritability, difficult to control
  - Facial: furrowed brow, grimace, clenched teeth, tightly closed eyes
  - Activity: less movement, agitated, guarding of a body part
  - Physical: pallor, sweat, gasping/breathing change, tense/stiff
  - Other: changes in sleeping & eating patterns

Specific Therapeutic Considerations

**Abdominal Route**
- **Codeine** does not delay surgical sequelae & improve bowel function
- **Relaxed patient** = better exam & better diagnosis!

**Chronic Daily Headache**

- **Acetaminophen or ibuprofen**. Ensure adequate dose, initiate quickly (1st dose in emergency department/city! Give round the clock 24-48hr.
- **Warm head & cold abdomen** for coolness
- **Ear Drops**: **Auralgan** (gervexic & benzocaine) sensitization: if perforated ear drum, avoid! Minimally effective, may aid in discomfort

**Emergency Trauma** (e.g. musculoskeletal trauma: extremities, back & neck) better than acetaminophen or codeine for pain relief & pain relief of 6th (Ref 12:13)

**Hepal Vein**

- **Immersion**: pressure at site helps
- **Lumbar Puncture**: should be done in po midazolam 1 mg = sucrose

**NG Tube Insertion**

- **Open wound** (Not near eye! Eviscerate tube out of remaining foreign body)
- **IV insertion**: Use non-pharmacological techniques. Explain steps if appropriate

**Post-op Analgesia**

- **Ketorolac**: instead of acetaminophen, may mix in po midazolam 1 mg = sucrose

**Preventing pain** may delay analgesic need for future procedures?

Q&A’s

- Is alternating acetaminophen with ibuprofen appropriate?
  - Not recommended by the Canadian Paediatric Society
  - Increased risk of adverse events = rena & potential for errors
  - Monotherapy sufficient & preferred for vast majority. If not effective, may switch to or add the other. Mechanisms differ for pain; may give one round the clock, with other PRN for breakthrough
  - Reassess if pain unresolved; combining both is an option for pain

Alternatives in topical/local anaesthetic allergy?

- True allergy to local anaesthetic is rare
  - Often due to preservative
  - Repeated use also T's potential for hypersensitivity reactions
  - Consider formulation without preservative if available/suitable
  - If allergic to amide (term use may restrict local use then consider: try an ester (procaic, tetracaine, benzocaine, coacice) & vice versa
  - Allergy to both amide & ester: diphendehydratine or benzyl alcohol: efficacy = 1 to lidocain

Extras: Drugs for Procedural Sedation

- Monitor for Procedural Sedation [check institution or department protocols & be aware of guidelines / liability implications. Should not be providing sedation & doing procedure.]
  - **Midazolam**: as adjunct prior to minor procedures; PO onset 20-40min, 1h; PO 0.5mg/kg 2-4mg/kg before anesthetic induction. Rare-See laryngoscopy, apnea, resp depression; recovery agitation. Preserves pharyngeal & resp fx.
  - **Airway instability, URTI, TCB, acute glaucoma, thyrotoxicosis, psych disorder. Age >1yr, max dose = 200mg PO**.
  - **N,O, Opioid, short act**: age >6mo, max = 1mg/kg, max for single use: Ketamine 4-1mg/kg IV x1 slow & may repeat after 30min, lidocain avoid with midazolam
  - **Propofol**: CAUTION - CAUTION TOXICITY metabolic acidosis, TCB, death in ICU. Infusion in steady flow for anesthesia. (Procedural sedation: 1mg/kg IV x1 then 0.5mg/kg/min. Age 3+)

Route of administration: generally use IV, PO but rarely

- Eviscerate the IM route (add to pain; on commencement)
  - TOPIC anaesthetics
  - **PCA pump option in cancer pain for older children**
  - Epidural: option if AEs
  - Psychological prep important

Dosaging: by weight mg/kg or RBA and by the hour!!!

- Be prepared to treat drug side effects as soon as they happen, or before (e.g. nausea, constipation & itch with opioids; dry mouth mucosa)

EBM: Oral ibuprofen 10mg/kg = to oral morphine 0.5mg/kg post-op minor orthop

Table 1: Pain Medication in Pediatrics – Overview (See also RxFiles pain related charts at www.RxFx.ca)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose in Peds</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acephotan</td>
<td>3.5mg/kg, 6mg/kg</td>
<td>(Procainamide) as</td>
</tr>
<tr>
<td>Lidocaine, Xylocaine, Tetracaine</td>
<td>0.5%-1%</td>
<td>(Procainamide) as</td>
</tr>
<tr>
<td>Mepivacaine</td>
<td>0.5%, 1%, 2%;</td>
<td>(Local anaesthetic) as</td>
</tr>
<tr>
<td>Prilocaine</td>
<td>2%</td>
<td>(Local anaesthetic) as</td>
</tr>
<tr>
<td>Bupivacaine</td>
<td>0.5%, 1%, 2%;</td>
<td>(Local anaesthetic) as</td>
</tr>
<tr>
<td>Mepivacaine</td>
<td>0.5%, 1%, 2%;</td>
<td>(Local anaesthetic) as</td>
</tr>
<tr>
<td>Lidocaine, Xylocaine, Tetracaine</td>
<td>0.5%-1%</td>
<td>(Procainamide) as</td>
</tr>
<tr>
<td>Sodium bicarb</td>
<td>0%</td>
<td>(Procainamide) as</td>
</tr>
<tr>
<td>Midazolam, Thiopental, Propofol, Ketamine</td>
<td>0%</td>
<td>(Procainamide) as</td>
</tr>
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</table>

Table 2: Topical Anaesthetics

<table>
<thead>
<tr>
<th>Drug</th>
<th>Topical Anaesthetics**</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lidocaine</td>
<td>5%</td>
<td>(Metabolite of Lidocaine)</td>
</tr>
<tr>
<td>Prilocaine</td>
<td>2%</td>
<td>(Metabolite of Prilocaine)</td>
</tr>
<tr>
<td>Mepivacaine</td>
<td>2%</td>
<td>(Metabolite of Mepivacaine)</td>
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Table 3: Other Local Anaesthetics

<table>
<thead>
<tr>
<th>Drug</th>
<th>Local Anaesthetics</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lidocaine, Xylocaine, Tetracaine</td>
<td>5%</td>
<td>(Procainamide) as</td>
</tr>
<tr>
<td>Mepivacaine</td>
<td>2%</td>
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<tr>
<td>Bupivacaine</td>
<td>0.5%, 1%, 2%;</td>
<td>(Local anaesthetic) as</td>
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<tr>
<td>Mepivacaine</td>
<td>0.5%, 1%, 2%;</td>
<td>(Local anaesthetic) as</td>
</tr>
</tbody>
</table>

References

EMLA (lidocaine and prilocaine) - for intact skin, requires occlusion, needs to be applied for at least one hour. Dose – To attain adequate anesthesia, 1 mg of EMLA cream should be applied per 10 sq cm (approximate size of a Canadian canoe) of skin and covered with an occlusive dressing for 45 to 60 minutes. The maximum application areas recommended for children are Less than 10 kg – 2 sq cm, 10–20 kg – 5 sq cm, greater than 20 kg – 2000 sq cm, causes vasovagal & 7 seizures.

See www.usask.ca/pediatrics/services/pain for information for parents on children's pain.

Pain Intensity Scoring:

- Choose a scale that is age appropriate to patient & become familiar with using.
- Interpret in light of any other pain related physiological factors (e.g. heart rate).
- Also interpret according to trends for improvement or worsening of pain control.

Pain Intensity Scoring:

- **Face**
  - No particular expression or smile
  - Occasional grimace or frown, withdrawn, disconnected
  - Frequent or consistent

- **Legs**
  - Uneasy, restless, tense
  - Squirming, shifting back and forth, tense
  - Kicking, legs or kicking

- **Activity**
  - Lying quietly, normal position, moves easily
  - Arched, rigid or jerking

- **Cry**
  - No cry (awake or asleep)
  - Moans or whimpers, occasional complaint
  - Crying steadily, screams or sob, frequent complaints

- **Consolation**, comfort, relaxed
  - Reassured by occasional touching, hugging or being talked to, comfortable
  - Difficult to comfort or console

Each of the five categories (D) Face; (L) Legs; (A) Activity; (C) Cry; (C) Consolation is scored from 0–2, which results in a total score of up to zero and ten.


**FLACC SCALE** - for assessing pain in very young children non-verbal; suitable for cognitively impaired children.

**Face**
- No particular expression or smile
- Occasional grimace or frown, withdrawn, disconnected
- Frequent or constant

**Legs**
- Uneasy, restless, tense
- Squirming, shifting back and forth, tense
- Kicking, legs or kicking

**Activity**
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**PAIN INTENSITY SCORING**

- Choose a scale that is age appropriate to patient & become familiar with using.
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- Also interpret according to trends for improvement or worsening of pain control.

**PAIN IntENSITY SCORING**

- **Face**
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Wong T, Stang AS, Ganshorn H, et al. Combined and alternating paracetamol and ibuprofen therapy for febrile children. Cochrane Database of Systematic Reviews 2013, Issue 10. Art. No.: CD009072. DOI: 10.1002/14651858.CD009072.pub2. There is some evidence that both alternating and combined antipyretic therapy may be more effective at reducing temperatures than monotherapy alone. However, the evidence for improvement measures of child discomfort remains inconclusive.


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