"IAP PEDIATRIC PROCEDURAL PAIN MANAGEMENT PROTOCOL"

(Presidential Action Plan 2019, IAP Kerala)

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Presidential Action Plan 2019, IAP KERALA

(Prepared by Prof. Dr Lulu Mathews, Former HOD, Pediatrics, GMC, Kozhikode, Dr Janaki, Addl. Prof. GMC Thrissur and Dr Hariprasad, Addl. Prof. GMC Trivandrum)

Pain in children is considered as the fifth vital sign, but is always underestimated. Inadequate pain managementin children leads to chronic pain syndromes and even personality changes. Considering the frequency of procedures done in sick children and its inadequate management, Indian Academy of Pediatrics, Kerala chapter is bringing out a protocol for management of procedural pain in children.

Ideal agent for procedural pain and analgesia

1. Provides adequate sedation and analgesia
2. Does not cause hemodynamic instability.
3. Has a short elimination half-life
4. Does not have unpleasant adverse reactions
5. Is effective orally
6. Has an antidote

Fasting: Recommendations (2-4-6 rule)

No solid food for 6 hours

No breastmilk for 4 hours

No clear fluids for 2 hours

The various procedures done in sick children include the following

- IV cannulation, Central line insertion, Arterial puncture
- Bone marrow aspiration, trephine biopsy
- Renal biopsy, Liver biopsy
- Lumbar puncture, Ventricular tap, Subdural tap,
- Pleural aspiration, Insertion of intercostal drainage tube,
- Peritoneal dialysis, Suprapubictap, Urinary catheter insertion
- Wound dressing, Post-operative pain, Fracture reduction,
- Mechanical ventilation

1) Intravenous cannulation:

- Apply **EMLA cream** (Eutectic Mixtureof Local Anesthetic) as a thick coat over the puncture sites. Place an occlusive dressing. Apply over 2-3 sites so that cannulation can be attempted at these sites if needed. Wait for minimum 45min to 1 hourbefore cannulation.

Issues:

- The cream can cause cutaneous vasoconstriction {tiny vessels may disappear}and hence may affect the visibility of small vessels. Hence we apply over 2-3 sites. The commonest agent available is a combination of **lignocaineand prilocaine {Trade name: PRILOX**}

2)Bone marrow aspiration/ Biopsy/Lumbar Puncture:

I)Apply**EMLA cream** as a thick coat over the area. Wait for 45-60 mts.

II) Sedate the child with any one of the three drugs

1)**Trichlorophos**(Eg:Pedichloryl)
Dose: 50mg/kg/dose

2) **Midazolam**-
a) Oral-0.5mg/kg/dose (wait for 30min:).Injectable form of midazolam can be used for oral administration.May be repeated after 45minutes
b) Subcutaneous or intravenous: 0.2mg/kg/dose

3) **Ketamine**
Dose: 0.5 to 1.0mg/kg diluted, IV

Precautions for Ketamine: Preferably avoided in children less than 2 years. May increase intracranial tension. Should be avoided if patient has hypertension, suspected heart disease or CNS pathology.

III) **%lignocaine infiltration**
Just 30 seconds prior to the procedure
Always limit the dose of lignocaine to 2mg/kg.

3) Urinary Catheter insertion:

Coat the tip of the catheter with **Xylocaine jelly** prior to procedure.
For boys, inject 2 to 5 ml of Xylocaine jelly with a syringe into the penile urethra and let it remain for 2 minutes prior to catheterisation

4) Wound dressing:

Soak wound with **1% lignocaine or lignocaine with adrenaline** preparation dose to be limited to 2mg/kg.

Wait for 5 minutes before attempting the dressing

5) Child on Peritoneal dialysis:

- **Lignocaine** at the site of puncture
- Sedation with**IV Midazolam** as and when needed or continuous infusion (1microgram/kg/minute in normal saline or 5% dextrose). Can be increased as per response every 15minutes (maximum dose: 2mg/kg/hour)

6) For CT scan:

Midazolam (oral or parenteral)
If not sedated: give **Ketamine** (if there is no contraindication as mentioned above)

7) Restraint in ICU:

Triclofos: alone is adequate. If needed,**Midazolam** can be given.

8) Burns:

Find out the desired analgesic dose of Morphine by “morphine trial” (I/V or oral).Continue morphine 4hrly along with supportive drugs (anti emetics and laxatives)

Morphine trial : Morphine 1ml =15mg: morphine

Dilute1ml of morphine with 9ml normal saline or distilled water. That means 10ml of this solution contains 15mg morphine (10ml=15 mg)

Give 1ml of this solution (1.5mg) slowly over 10 min: till pain isrelieved or child sleeps or adverse effects appear. The amount of morphine needed to relieve the pain is "one dose of morphine". This dose is given orally four hourly. The usual oral dose is0.15-0.3 mg/kg/dose :4hrly.

9) Post-operative pain

Consider pain as 5thvital sign. Record pain on scale 8th hourly. Choose the pain scale based on the age. Follow the WHO step ladder management.

Step: I (Mild to Moderate pain)

Ibuprofen: 10mg/kg/dose: four times a day:40mg/kg/day (Max:2400mg/day)

Naproxen: 20mg/kg/day: twice or thrice a day (max:1000mg/day)

Diclofenac: 1mg/kg/dose:12hrly (max:50mg/dose)

Step: II (Moderate – Severe pain) If pain persists:

1)**Morphine-** orally or as infusion: Oral dose: 0.15-0.3mg/kg/dose four hourly. Infusion dose:(0.025-0.05mg/kg/hr)

2)**Fentanyl infusion**:(Injection-(1-2microgm/kg/hour)

10)Fracture reduction:

Morphine± Midazolam

Oral	0.3mg/kg Morphine+0.5mg/kg Midazolam
	OR
s/c or i/v	0.1mg/kg Morphine+0.2mg/kg Midazolam

Wait for 45min: if the drug is given orally
for 20min:if it is given subcutaneously.

Precaution: watch for respiratory depression .Observe for AT LEAST 2HRS

12) Spastic CP child

Pain relieved by **Tab Diazepam** 0.2mg/kg TID for 3 weeks in a month, skip for 1 week, then restart. This will relieve the pain due to spasm and hence physiotherapy can be given without causing discomfort to the child.

Common procedures done in neonates

- Heel prick
- IV cannulation
- Arterial puncture
- Umbilical cannulation
- Lumbar puncture
- Ventricular tap
- Intubation
- ET suctioning
- ICD insertion
- Removal of adhesivedressing
- Supra pubic puncture
- Ophthalmic examination for ROP screening
- Laser therapy for ROP

Procedures that lead to chronic pain in newborns include:

- Mechanical ventilation
- Post -operative state

Non-pharmacological measures that are useful in new-borns

- Breastfeeding/ few drops of milk on the tongue
- Skin to skin contact
- Non-nutritive sucking
- Swaddling
- Facilitated tucking
- Individualized developmental care

Pharmacological measures are the following:

- Sucrose solution 24%, 1-2 drops of sterile solution on the anterior part of the tongue
- 25% dextrose, 1-2 drops on the tongue

- Paracetamol drops (10mg/kg). Intravenous Paracetamol can also be given.
- EMLA cream: (Prilocaine 2.5% & Lignocaine 2.5%) 60mins prior to procedure. Remove within 2 hours of application.

Laser therapy for ROP:

- Proparacaine (0.5%) eye drops1 drop: 1min: prior to procedure

Baby on ventilator/ post operative/ chronic pain

- Fentanyl infusion
  (1-2micgm/kg bolus followed by 0.5 to 1 mecum/kg/hr)
- Morphine infusion
  (0.1mg/kg bolus followed by 5 to 20 microgram/kg/hour in pre-terms,
  10 to 20microgram/kg/hour in terms

Lignocaine as local anaesthetic (0.3 ml/kg of 1% solution)

References: Nelson Text Book of Pediatrics, 20th Edn
Oxford Text Book of Palliative Care
WHO Guidelines: Pain in children
Introduction to Palliative Care by Robert Trycross
The PGI NICU Handbook of Protocols
AAP guidelines for managing Neonatal pain

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Kozhikode
Kerala

Dr SANTOSH.M.K
President IAP Kerala

Dr BALACHANDAR.D
Secretary, IAP


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