

PAEDIATRIC PAIN MANAGEMENT

SEVERE PAIN in early childhood is bad news. Normally, synaptic reorganization takes place in early childhood and you don't want an excess or a deficit of sensation, because these will cause permanent problems.

For example, full thickness skin wounds can cause a persistent increased sensitivity in that area, in absence of any persisting injury.

PLUS: the cognitive, psychological perceptions of and responses to pain will be altered.

ASSESSMENT OF PAIN:

- in **NEONATES**: use physiological markers; furrow of brow, nasolabial fold, O₂ sats, tachycardia
- in **INFANTS**: use consolability, facial/limb movements, sleep disturbance, eye squeeze, crying amplitude
- in **TODDLERS**: use consolability, pain scales involving faces, maybe self-report
- in **OLDER CHILDREN**, self reporting becomes more reliable.

SHORT-TERM ANALGESIA:

NEONATES are actually **MORE** susceptible to pain, as they have more **NMDA** receptors and **A-fibres**. It's a common myth that the reverse is true.

PROCEDURAL PAIN:

- for **CANNULAE**, use nitrous oxide or EMLA cream (lignocaine and prilocaine). Nitrous is best.
- For **MINOR PROCEDURES**, nitrous and EMLA is best.
- For **MODERATELY SEVERE** procedures, eg. lumbar puncture or bone marrow aspirates, a combination of nitrous oxide and a local anaesthetic would be acceptable.
- For **MAJOR** procedures, use either nitrous oxide (its still good, even with severe pain) OR use IV regional anaesthesia (if you know how to do that)... OR... for something like closed fracture reduction.. use **KETAMINE + MIDAZOLAM**

OPIATES: good for rapid-onset analgesia in emergency situations; long term administration is complicated by respiratory and gastrointestinal side-effects

KETAMINE you need to keep a good eye on, in case of unsolicited deep sedation (keep a laryngoscope handy)

- otherwise, its usually fine; some unpleasant salivation, hallucinations, hypertension....

MIDAZOLAM sedates but does not actually relieve pain, so use some accessory analgesia.

COMBINATION of drugs has more adverse effects. No single combination has any greater risk.

LONG-TERM ANALGESIA:

ALWAYS GIVE IV ANALGESIA IN INCREMENTS
Eg. split the dose into halves or thirds

PARACETAMOL:

Safe as houses. Needs a higher dose than the usual antipyretic dose.

20 micrograms per kg per ml is an appropriate PCA dose

NSAIDS: !! DO NOT USE in the under-6-months age group!

(may cause pulmonary hypertension with altered cerebral + renal blood flow)

Ibuprofen is safe. Use it. Decreases opiate requirements and acts synergistically with paracetamol.

ASPIRIN is NOT GIVEN to children; may cause **REYE'S SYNDROME** (encephalopathy and liver failure)

OPIATES: the younger you are, the less you need. Longer half-life and reduced clearance rate.

MORPHINE PCA is good in children as young as 5 years. You can also have Nurse-controlled analgesia, where a nurse walks past and pushes the button for you.

PAEDIATRIC MORPHINE:
0.1 mg per kilogram

EPIDURAL ANAESTHESIA FOR PROCEDURES

Single-shot caudal block, or continuous infusion; either can be as good a systemic opioids. Most serious complication is accidental venous infusion, with systemic complications. Mainly cardiological.

SMALL-SCALE PAIN PHYSIOLOGY: responses to pain include....

- increased **ACTH, CORTISOL**; thus, insulin resistance and fluid retention, reduced immune response
- increased **Adrenaline**; thus hypertension, hyperventilation, and impaired insulin release
- increased **Glucagon**, thus hyperglycaemia and elevated metabolic rate.
- Increased **ADH**, thus increased sodium and water retention, and thus hypertension
- Increased sympathetic activity, thus hypertension and **RENIN** release (the whole cascade)
- All this results in impaired GI function, and elevated cardiovascular function.