PAEDIATRIC ANAESTHESIA

Common Perioperative Problems

CONSENSUS GUIDELINES FOR PREVENTION OF POSTOPERATIVE NAUSEA AND VOMITING (PONV)

Postoperative nausea and vomiting (PONV) is one of the leading postoperative complaints from parents and the leading cause of readmission to the hospital. Severe vomiting can be associated with dehydration, postoperative bleeding, pulmonary aspiration, and wound dehiscence.[1]

POV occurs twice as frequently in children than in adults, increasing from 3 yrs of age until puberty, then decreasing to adult rates. Gender differences are not seen before puberty. The two most common emetogenic surgical procedures evaluated in children are strabismus repair and adenotonsillectomy.

POV RISK

(A prospective evaluation of the POVOC score for prediction of post operative vomiting in children Anesth Analg 2007)

Number of risk factors	POV risk (%)
0	9
1	10
2	30
3	55
4	70

Risk factors include: age≥ 3 yrs
duration of surgery ≥30 mins
strabismus surgery
previous hx of PONV

The management of PONV in children involves proper preoperative preparation, risk stratification, rational selection of antiemetic prophylaxis, choice of anesthesia technique, and a plan for postoperative antiemetic therapy. Children at moderate-to-high risk for PONV should receive prophylactic antiemetic therapy which can be single or double.

We reviewed various PONV consensus guidelines and management algorithms of other paediatric units. Whilst considering local prescribing guidelines, we recommend the following:

INTRA-OP PROPHYLAXIS

Single drug

- *IV ondansetron 0.15mg/kg* (max 8 mg, only in children > 1 mth old, to be used with caution in cardiac patients with arrhythmias) for the following groups:
  - ≥ 3yrs + use of intra-opt opioids
  - ≥ 3yrs + middle ear surgery
  - ≥ 3yrs + surgeries ≥30 mins duration

Double prophylaxis

- *IV ondansetron 0.15 mg/kg* (max 8 mg) AND
- *IV dexamethasone 0.15 mg/kg* (max 5mg) for any of the following risk factors:
  - Strabismus surgery
  - Tonsillectomy ± Adenoidectomy
  - Middle ear surgery + opioid use
  - Previous history of PONV

POST-OP PRESCRIPTION

- **IV ondansetron 0.15 mg/kg 8 hourly/prn** for:
  - ALL SDA and inpatients (√ the □ on the doctor's postoperative orders on the computer in Theatre.)

ALL patients put on Acute Pain Service for PCA/NCA opioids and epidurals. (Order in the CLMM along with Acute Pain Service orders)

TREATMENT for established vomiting (defined as vomiting ≥ 2X post-op)

- **IV ondansetron 0.2mg/kg (max 8 mg)**
  - If ondansetron has not been given

- **IV dexamethasone 0.15 mg/kg (max 8 mg)**
  - If only ondansetron has been given, and dexa not given yet
  - Ensure no contra-indications eg. Hyperglyceamia/ sepsis

- **Call the consultant anaesthetist** if vomiting persists in spite of the above, may consider the following with discretion:
  - IV Metoclopramide 0.5 mg/kg (slow bolus over 10 min) (max 20 mg)
  - IV Dimenhydrinate 0.5 mg/kg (max 12.5 mg)
  - IV Promethazine 0.5 mg/kg (max 25 mg)- only in children>6 mths old
  - IV Droperidol 10-15 mcg/kg (max 1.25 mg)- not as first-line, only in children>2yrs with wt>10kg, see FDA black box warning.
  - IV Dolasetron 350mcg/kg (max 12.5 mg)
  - IV Granisetron 40 mcg/kg (max 0.6 mg)
  - IV Tropisetron 0.1 mg/kg (max 2 mg)
  - IV Propofol subhypnotic dose infusion (as rescue in PACU only, ordered by consultant anaesthetist)

General peri-operative measures to reduce POV baseline risks.

- Ensure adequate hydration
  - Allow clear feeds up to 2 hrs before induction
  - Intra-opt IV fluids
- Avoid/minimize the use of
  - nitrous oxide for maintenance, especially prolonged surgeries
  - Volatiles
  - Peri-operative opioids
- By Multi-modal analgesia, using opioid-sparing agents and techniques
  - eg. IV paracetamol, NSAIDs, ketamine, Regional blocks
- TIVA techniques if indicated eg, prev hx of severe POV
- Other non-pharmocological techniques eg. acupuncture

References:

1. Management of postoperative nausea and vomiting in children. Paediatr Drugs. 2007;9(1):47-69.
2. Guidelines on the Prevention of Postoperative Vomiting in Children. APA guidelines 2009.
3. The development and validation of a risk score to predict the probability of postoperative vomiting inpediatric patients. Anesth Analg 2004;99:1630–7
4. A prospective evaluation of the POVOC score for prediction of post-operative vomiting in children Anesth Analg 2007; 105:1592-7
5. Consensus guidelines for the management of postoperative nausea and vomiting. Anesth Analg. 2014 Jan;118 (1):85-113.