



**2020 CAS VIRTUAL Annual Meeting**  
Saturday, June 20 - Sunday, June 21, 2020

# **2020 CAS Annual Meeting**

**Pediatric**

**(Abstracts)**

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## Consent Practices Among Canadian Pediatric Anesthesiologists

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**Introduction:** Currently, there is little to no research in the area of consent for pediatric anesthesia. We aim to clarify the current consent practices of pediatric anesthesiologists in Canada. Physicians best modify their practice (if required) when the current state of practice is clearly outlined. With this data, we can show similarities or differences with how our consent process aligns with the preferences of parents and guardians of children undergoing anesthesia. This may be a starting point for suggestions for a standardized patient-centred consent discussion.

**Methods:** Ethics approval was obtained from the local REB. This study survey was sent out via email invitation to members of the Canadian Pediatric Anesthesia Society (CPAS) which comprises of pediatric anesthesiologists practicing at children's hospitals across Canada. This study is web-based and consists of 14 multiple choice questions with content including practitioner demographics (ie. years in practice), patient demographics (ie. age of patients), and components of the consent process for that practitioner (ie. risks and incidence mentioned to patients for informed consent). The Queen's survey tool Qualtrics was used to design and distribute the survey. The survey was sent out on August 11th, 2019 and the survey closed to respondents November 4th, 2019. It was subsequently analyzed by the Principal Investigator and the Co-investigator.

**Results:** The survey was completed by 60 CPAS Members (response rate TBD). The vast majority of the respondents were Anesthesiologists (96.7%), 98.3% of them have done a fellowship in Pediatric Anesthesia. The 5 most commonly discussed risks for general anesthesia were PONV (86.1%), sore throat (75.5%), dental damage (66.8%), emergence delirium (54.5%), and respiratory concerns (45.7%). The most commonly discussed risks for regional anesthesia were infection (84.3%), inadequate anesthesia (82.6%), minor nerve damage (75.5%), major nerve damage (73.7%), and hematoma (73.7%). For sedation the most commonly discussed risks were conversion to general anesthesia (72.2%), awareness (47.6%), respiratory concern (37.0%), paradoxical response (35.2%), and allergy (19.4%). Other notable results found that 46.6% of respondents obtained consent for the administration of rectal acetaminophen, and that the most commonly volunteered age for consent was 14 years old. It was also found that the majority of practitioners gain verbal consent (61.0%) as opposed to written (8.5%) or both (30.5%).

**Conclusion:** Results show that the risks discussed in the consent process for pediatric anesthesia vary largely among practitioners. More research is needed to determine if there is a need for a standardized model for patient-centered consent discussion.



### GA Risks discussed

| Risk                 | %    |
|----------------------|------|
| Postop NV            | 86.1 |
| Sore Throat          | 75.5 |
| Dental Damage        | 66.8 |
| Emergence Delerium   | 54.5 |
| Respiratory Concerns | 45.7 |



### Regional Risks Discussed

| Risk                  | %    |
|-----------------------|------|
| Infection             | 84.3 |
| Inadequate Anesthesia | 82.6 |
| Minor Nerve Damage    | 75.5 |
| Major Nerve Damage    | 73.7 |
| Hematoma              | 73.7 |



### Sedation Risks Discussed

| Risk                 | %    |
|----------------------|------|
| Conversion to GA     | 72.2 |
| Awareness            | 47.6 |
| Respiratory Concerns | 37.0 |
| Paradoxical Response | 35.2 |
| Allergy              | 19.4 |

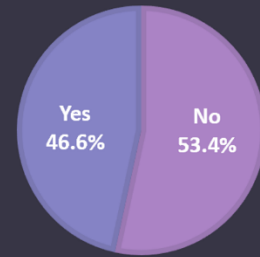


### Incidence of Risks Discussed

| Risk                 | %    |
|----------------------|------|
| Major Nerve Damage   | 51.1 |
| Respiratory Concerns | 49.1 |
| Headache             | 48.9 |
| Postop NV            | 46.7 |
| Dental Damage        | 40.0 |



### Consent for PR Tylenol



## Improving Outcomes in Post Anaesthetic Care Unit (PACU) for Post-Operative Tonsillectomy Patients in a Quaternary Referral Centre: A Quality Improvement Initiative

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**Introduction:** Patients are presenting for tonsillectomy +/- adenoidectomy (T&A) for treatment of obstructive sleep apnoea (OSA) [1] at an increasing rate. Our institution has a varied patient population, often with multiple co-morbidities. By comparing our current patient population and practice to local and national recommendations [2], we aim to develop a care bundle primarily to improve post-operative pain scores and, potentially, minimize peri-operative respiratory adverse events (PRAE)[2], post-operative nausea and vomiting (PONV) and emergence agitation.

**Methods:** Ethics approval was waived by the local REB following approval by our institutional Quality Improvement Review process. A retrospective chart review was performed using the electronic patient record. Data was extracted from cases undergoing Tonsillectomy +/- Adenoidectomy between June 1, 2018 and May 31, 2019. 234 cases were identified. Excluded were cases (125) that had additional procedures; were coming from Pediatric Intensive Care Unit (PICU); or had planned PICU admissions, thereby bypassing PACU. In total 109 cases were analysed.

**Results:** The mean (range) age was 5.16 years (1-17) and weight was 23.73kg (8–114.4) with a M:F ratio of 1.56:1. 94 cases (86%) were treatment for OSA, of which 48 cases (51%) had a sleep study result with a mean maximum recorded AHI of 17.69 (2.6 – 81.8). 10 cases (9%) were for recurrent tonsillitis and a further 5 for other reasons.

67 patients (61%) required analgesia in PACU. 62 (57%) complained of moderate to severe pain, 57 of whom received further opioids at a mean dose of 0.048mg/kg ME.

There were 4 instances of oxygen saturations less than 90% recorded in PACU, requiring minimal intervention. Emergence agitation was recorded in 18 patients (17%). 4 incidences (4%) of PONV were documented, 87 cases (80%) received ondansetron and dexamethasone intra-operatively, yet 30 patients (28%) received dimenhydrinate in PACU.

**Discussion:** The population presenting for T&A at our institution is predominantly for treatment of moderate to severe OSA. Concerns of opioid related respiratory events in PACU may explain the relatively few desaturation events contrasted with the incidence of moderate to severe pain in PACU.

Use of acetaminophen and dexamethasone (Grade A recommendation [3]), are already established perioperative practice in our centre, whilst use of NSAIDs (Grade A) is not as widely accepted by otolaryngology surgeons. Elements that show potential for low risk, high reward inclusion in a new care bundle include surgical infiltration of local anaesthetic (Grade B) and intra-operative dexmedetomidine (Grade C).

The results of this pilot study suggest that post-operative pain can be improved through greater adherence to recent recommendations. Any future project would also monitor PONV and PRAE as balance measures.

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2. Ramgolam A, Hall GL, Zhang G, Hegarty M, von Ungern-Sternberg BS. Deep or awake removal of laryngeal mask airway in children at risk of respiratory adverse events undergoing tonsillectomy-a randomized controlled trial. *BJA* 2018;120: 571-580.
3. Quality Based Procedure Tonsillectomy with or without Adenoidectomy Toolkit, PCMCH

| #     | Grade | Recommendations                                     | The Hospital for Sick Children, Toronto  |
|-------|-------|---|--|
| 2.1.2 | B     | Local Anesthesia                                    | 51 (47%) had local anaesthetic applied by the surgical team  |
| 2.2.1 | A     | Intra-Operative Steroids                            | 97 (89%) received intraoperative dexamethasone, mean dose 0.14mg/kg  |
| 2.2.2 | A     | Acetaminophen                                       | 99 (91%) received pre-operative acetaminophen  |
| 2.2.4 | A     | Intra-Operative NSAIDs                              | 2 (2%) received pre-op ibuprofen. 47 (43%) received intra-operative ketorolac  |
| 2.2.5 | C     | Analgesia for patients with known or suspected OSAS | 107 (98%) received at least one opioid intra-operatively, 54 (50%) received two. Mean morphine equivalent (ME) dose given was 0.11mg/kg.<br>75 patients (69%) were given dexmedetomidine, mean dose 0.43mcg/kg |

Table 1: Provincial Council for Maternal and Child Health Recommendations [3] vs our institution data

## Pediatric Dentistry Under General Anesthesia: A Saskatchewan Profile

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**Introduction:** More than 19,000 Canadian children aged 0-6 years undergo dental treatment under general anesthesia (GA) annually. National data suggest that children of low socioeconomic status, from rural areas, and from neighbourhoods with a high proportion of Indigenous peoples are more likely to receive dental care under GA. In addition to the usual risks of GA, concerns remain about the potential long-term neurodevelopmental risks of early and repeated exposure to GA. The objectives of this study were to determine the prevalence and predictive factors for dental treatment under GA in Saskatoon, Saskatchewan, a tertiary care referral center with a catchment area of 500,000 people.

**Methods:** Ethics approval was obtained from the local REB. We conducted a retrospective review of children aged 0-6 years who underwent dental treatment under GA in Saskatoon between the years 2015-2018. Demographic, dental diagnostic and treatment data, and the number of previous exposures to GA were collected. Quantitative analysis included comparisons of proportions and measures of associations between demographic and clinical variables.

**Results:** A total of 570 patient records were reviewed. The mean age of children in the sample was  $4.57 \pm 0.73$  with 21.4% having required dental treatment under GA on more than 1 occasion. Fifty percent of the sample lived within a 1-hour driving distance from Saskatoon, compared to 22.7% who lived greater than 3 hours away. The dental treatment needs for the sample were complex, with children having a mean of  $10.85 \pm 3.56$  teeth treated, at an average dental treatment cost of  $\$3231.72 \pm 898.95$  and anesthesia cost of  $\$784.33 \pm 159.81$  per child. Comparisons based on driving distance revealed that children who lived greater than 1-hour driving distance away from Saskatoon had a significantly higher severity of tooth decay, total number of teeth treated, total extractions, total crowns placed, and cost of dental treatment. Additionally, children who lived greater than 1-hour driving distance away from Saskatoon were 30% more likely to have had previous dental treatment under GA (OR: 1.3, 95%CI: 1.03 – 1.65) when compared to those who lived closer.

**Conclusion:** Our results demonstrate that children who live greater than 1-hour away from Saskatoon have a higher burden of disease and are more likely to require repeated GA exposures for dental treatment. Further analysis is pending to uncover the incidence of dental care under GA for First Nations children. Targeted prevention strategies to reduce the burden of oral disease for high-risk children must be considered to reduce the incidence of dental cases under GA. We further recommend that Health Authorities prioritize addressing geographic disparities that exist with access to timely dental care.

**Table 1. Differences by driving distance from primary treatment site**

| Outcome measure                                  | Within 1-hr | Greater than 1-hr | 95% CI                           |
|--|-------------|-------------------|----------------------------------|
| Repeat treatment under GA (OR)                   | 0.80        | 1.30**            | 0.70-0.95;1.03-1.65 <sup>‡</sup> |
| Total time under GA in minutes (mean)            | 105.16      | 103.74            | 99.9 - 108.97 <sup>‡</sup>       |
| DMFT/dmft index [decayed, missing, filled teeth] | 10.91       | 12.14***          | 10.85 - 12.04 <sup>‡</sup>       |
| Total teeth treated (mean)                       | 10.32       | 11.59***          | 10.28 - 11.42 <sup>‡</sup>       |
| Total restorations placed (mean)                 | 8.35        | 8.90*             | 8.12 - 8.78 <sup>‡</sup>         |
| Total extractions (mean)                         | 1.77        | 2.68***           | 1.81 - 2.63 <sup>‡</sup>         |
| Total dental treatment cost per child (\$)       | 3056.01     | 3408.99***        | 3025.60 – 3336.40 <sup>‡</sup>   |
| Total anesthesia cost per child (\$)             | 788.46      | 780.16            | 757.74 – 810.26 <sup>‡</sup>     |

<sup>‡</sup> Independent T-Test; <sup>‡</sup> Chi-Squared Test; \* p < 0.05; \*\* p < 0.01; \*\*\* p < 0.001



## Population-Based Incidence and Prevalence of Child's Anxiety During Induction of Anesthesia and Efficacy of Anxiolytic Techniques From 13,523 Cases

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**Introduction:** Preoperative anxiety in children continues to be a challenge for anesthesiologists with a reported incidence of 40 to 60% during induction of anesthesia (1,2). These incidents rates have been reported from clinical trials and may not be reflected in real world practice. The goal of our study was to provide a population-based incidence of anxiety in children during induction of anesthesia, as well as identify interventions used, and their efficacy.

**Methods:** Ethics approval was obtained from the local REB. This was a retrospective observational study, of induction behaviour assessments of pediatric patients undergoing anesthesia at the Hospital for Sick Children. De-identified anesthesia induction behaviour assessments of patients <18 years of age were extracted from our Epic electronic record, between February 10th 2019 to October 31st 2019. The validated Child Induction Behavioural Assessment (CIBA) Tool, a 3-point likert scale ranking induction as smooth, moderate or difficult is used to document induction behaviour at our institution at each induction encounter (3,4).

**Results:** 13,523 pediatric anesthesia induction behaviour assessments were extracted. 6245 (46.2%) were mask inductions, 5662 (41.9%) were intravenous inductions, 3 (0.02%) were intramuscular inductions, and 1613 (11.9%) did not indicate the method of induction. Using the CIBA Tool, the overall incidence of difficult induction was 7.8% (95% CI, 7.41-8.32%). The incidence of a difficult induction decreased with age as patients <1 year of age, 1 to 3 years of age, 4 to 12 years of age, and 13 to 17 years of age, had incidences of 10.2% (95% CI, 8.72-11.9%), 15.0% (95% CI, 13.9-16.2%), 5.5% (95% CI, 4.9-6.1%), and 1.8% (95% CI, 1.3-2.4%), respectively. Of those that experienced mask induction, there was an overall incidence of 12.4% (95% CI, 11.6-13.2%) of severe anxiety compared to an overall incidence of 3.0% (95% CI, 2.6%-3.5%) in patients undergoing intravenous inductions. Parental presence was used in 41.4% of cases and reported as effective in 66.0% (95% CI, 64.8-67.2%) of patients. Premedication was used in 22.7% of cases and reported as effective in 50.2% (95% CI 48.5-52.0%) of cases.

**Conclusion:** This is the first study reporting a population-based incidence of anxiety during induction of anesthesia in children. The incidence is significantly lower than that reported in clinical trials. This may be a reflection of excellent screening and management of patients with severe anxiety in the perioperative setting. As expected, the incidence of anxiety is patient-age dependent. The choice of induction technique demonstrated a difference in the incidence of difficult induction. Premedication and parental presence when used, were an effective, but not always efficacious, means of managing anxiety. Future work underway is extracting similar data in a multicenter fashion, to observe differences in induction in different populations and adjusting the role of other factors.

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3. <https://doi.org/10.1016/j.jopan.2016.10.004>
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