

# Use of celecoxib in post-adenotonsillectomy paediatric patients



Annie Cobbledick, Molika In, Dhrita Khatri, Brian Lilley

Pharmacy Department, The Royal Children's Hospital, Melbourne

## Background

Adenotonsillectomy is a frequent surgery seen in the paediatric population. Poor pain control is shown to lead to an increase in hospital visits, reduced food intake, dehydration and sleep disturbances. The usual pain management prescribed is paracetamol and opioids used on a "when required" basis.<sup>1,2</sup>

Non-steroidal anti-inflammatory drugs (NSAIDs) are seen as an effective analgesic, however they have an increased risk of bleeding, limiting their use in the paediatric population.<sup>1,2</sup> Celecoxib, a cyclooxygenase 2 (COX-2) inhibitor does not affect platelet function nor increase the risk of bleeding, while still having the beneficial anti-inflammatory effects.<sup>1,2</sup> Thus, this is thought to be a preferred option in tonsillectomy patients. A review of trials suggest when celecoxib is given post-tonsillectomy in paediatric patients, it is effective in reducing the incidence of secondary haemorrhages.<sup>3</sup>

The selectivity of celecoxib, suggests that its use would be appropriate in patients after undergoing tonsillectomy and adenoidectomy procedures. Reviews in other tertiary paediatric hospitals have found celecoxib to be well tolerated in children aged 6 to 17<sup>2</sup>, however further evidence supporting this is not well established, particularly with regards to dosage and duration of treatment. A double-blinded randomised trial compared celecoxib at 3mg/kg twice a day for 5 days post-tonsillectomy with placebo and found that although celecoxib reduced early pain, due to the clearance of celecoxib in children, they may need a higher dose, increased frequency and treatment duration of celecoxib.<sup>1</sup>

At our hospital, celecoxib is used routinely in this population group after Tonsillectomy and Adenoidectomy procedures at a recommended dose of 4mg/kg (max 200mg) twice a day for a total course of 7 days.

This audit investigates the prescribing of celecoxib at the Royal Children's Hospital (RCH) in patients undergoing Tonsillectomy and Adenoidectomy procedures with the analgesic protocol recommending 4mg/kg.<sup>4</sup>

## Aim

To determine if celecoxib is prescribed as per current guidelines at The Royal Children's Hospital.

## Method

A retrospective review of children prescribed celecoxib over a 12-month period (1st April 2016 to 30th March 2017) was conducted. Data was extrapolated from dispensing software (Merlin) and Electronic medical records (Epic) into Microsoft Excel. Data collected included: date of dispensing, patient date of birth, age, weight, indication for celecoxib, dose prescribed, frequency, duration of treatment, quantity prescribed, prescribing team and directions on dispensing label.

Microsoft excel was used to analyse data in terms of appropriate dose, indications, frequency and duration of therapy in this patient group.

## Results

Over the 12-month period (see Figure 1):

- 278 patients aged between 11 months old and 17 years old were identified to have celecoxib dispensed
- 96.4% (268/278) were dispensed celecoxib after tonsillectomy, adenoidectomy or both procedures
- 1.8% (5/278) were dispensed celecoxib NOT for tonsillectomy and adenoidectomy, but were under the care of Ear, Nose and Throat (ENT)
- 1.8% (5/278) were dispensed celecoxib for other indications

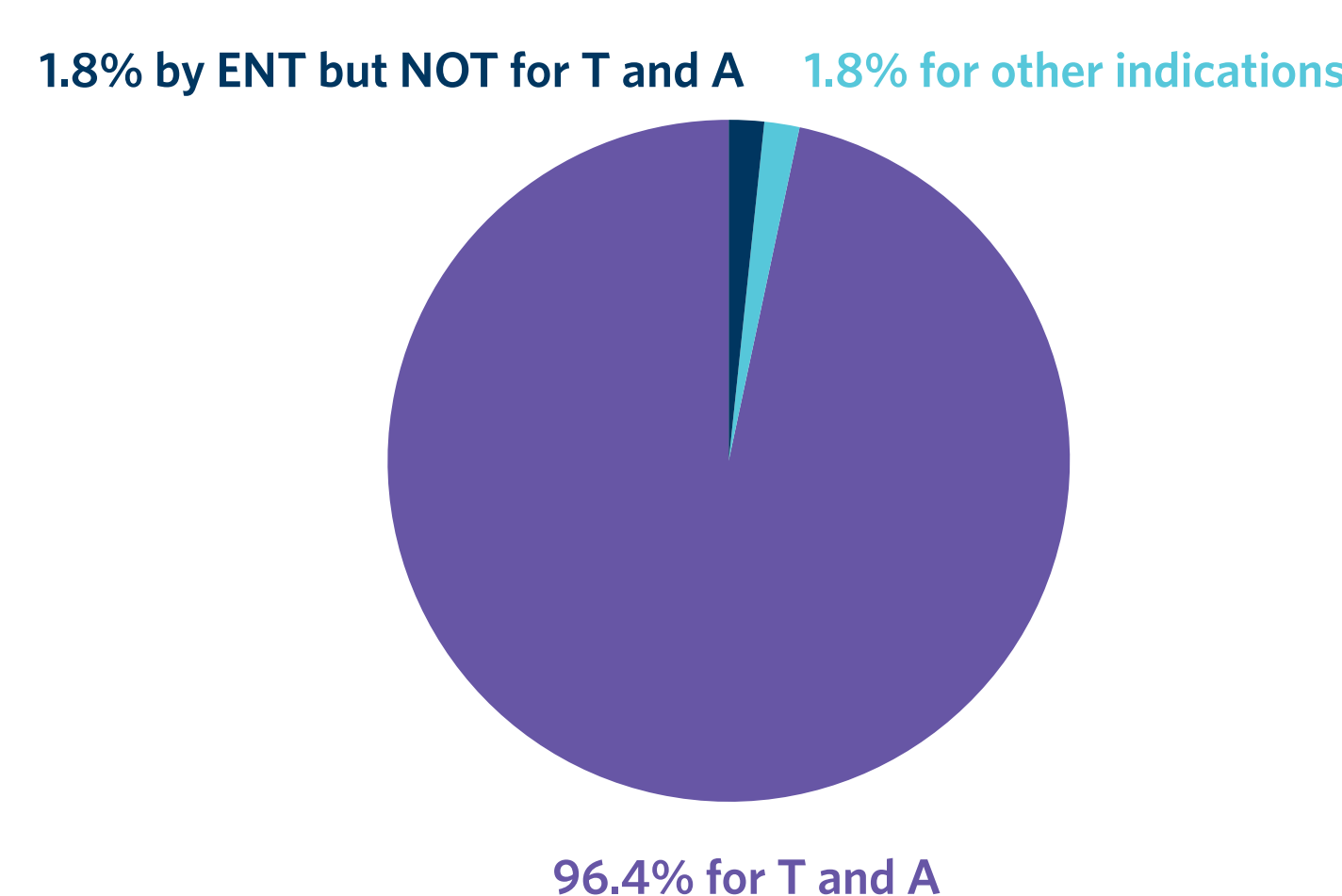


Figure 1. Number of patients prescribed celecoxib at The Royal Children's Hospital over a 12 month period

22 prescriptions for celecoxib were before the implementation of Electronic Medical Records and therefore were unable to be analysed. Of the 256 available prescriptions (see Figure 2):

- 70.3% (180/256) were specified as a 7-day course
- 70.7% (181/256) were prescribed at a dose of 4mg/kg or a maximum of 200mg
- 95.3% (253/256) were prescribed with the correct frequency

Therefore, a total of 70.3% were prescribed as per guidelines.

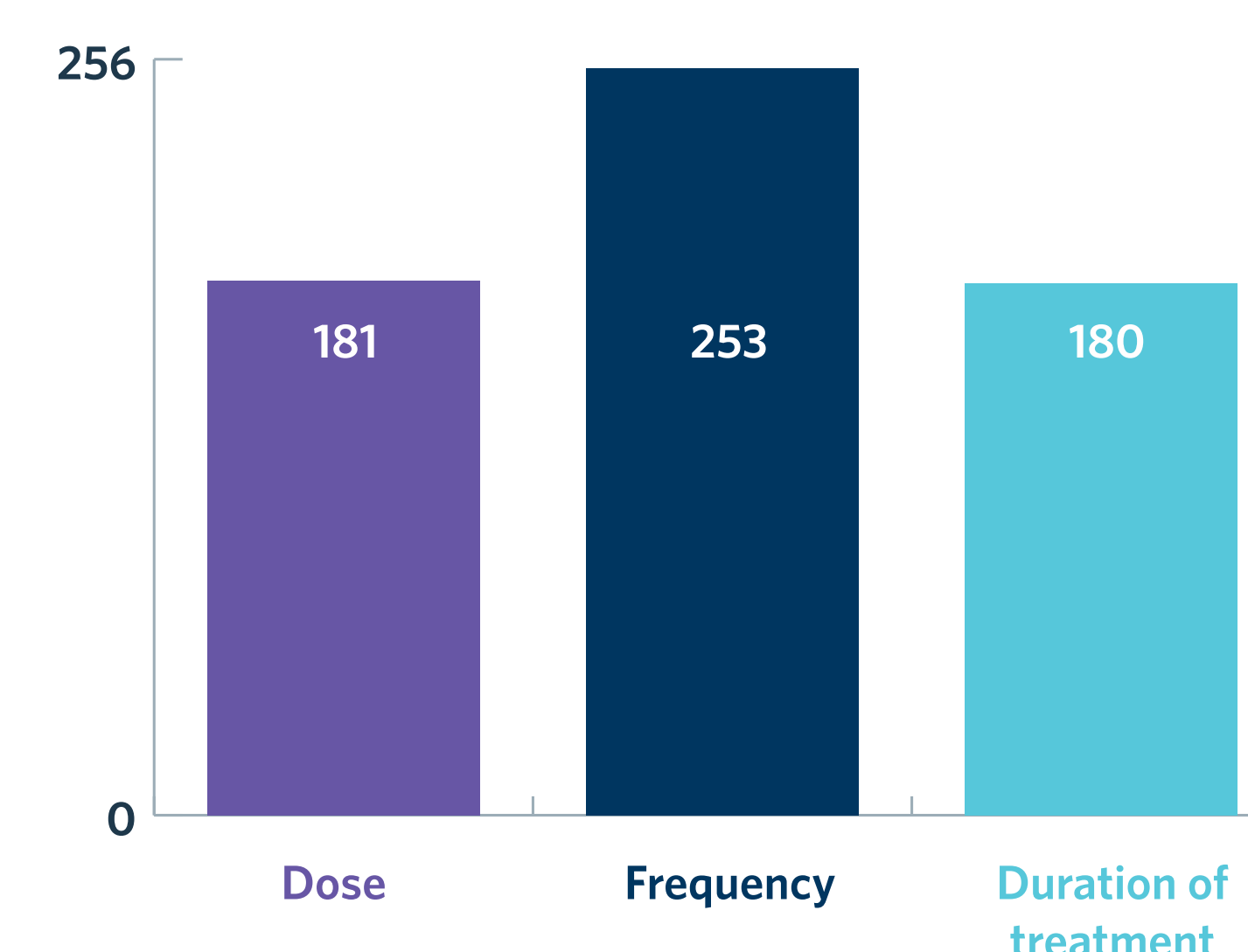


Figure 2. Number of patients prescribed celecoxib as per The Royal Children's Hospital analgesic protocol

## Discussion

At the RCH, the majority of celecoxib is prescribed after tonsillectomy and adenoidectomy, according to the current RCH guidelines, with 70% prescribed at a dose of 4mg/kg. Since completing this audit, there has been an amendment to the dosing for celecoxib post-adenotonsillectomy in obese children. Those >95th centile weight have their dose based on the 75th centile weight or use the Peter's formula to calculate Lean Body Mass.

## Conclusion

The majority of prescriptions for celecoxib dispensed were for patients who underwent an adenotonsillectomy. Around two thirds of these were prescribed with twice daily dosing of 4mg/kg, and a specified course duration of 7 days, and therefore around two thirds of prescriptions met the appropriate guidelines.

## References

1. Murto K, Lamontagne C, McFaul C, MacCormick J, Ramakko KA, Aglipay M, Rosen D, Vaillancourt R. Celecoxib pharmacogenetics and pediatric adenotonsillectomy: a double-blinded randomized controlled study. *Canadian Journal of Anesthesia/Journal canadien d'anesthésie*. 2015 Jul 1;62(7):785-97
2. Turner S, Ford V. Role of the selective cyclo-oxygenase-2 (COX-2) inhibitors in children. *Archives of Disease in Childhood-Education and Practice*. 2004 Oct 1;89(2):ep46-9.
3. Nikanne E, Kokki H, Salo J, Linna TJ. Celecoxib and ketoprofen for pain management during tonsillectomy: a placebo-controlled clinical trial. *Otolaryngology-Head and Neck Surgery*. 2005 Feb 28;132(2):287-94.
4. EPIC Order Set. IP Analgesic Ladder Complex. Royal Children's Hospital. Parkville; Australia. [cited on October 20, 2017].
5. Peters AM, Snelling HL, Glass DM, Bird NJ. Estimation of Lean Body Mass in Children. *Survey of Anesthesiology*. 2012 Feb 1;56(1):26-7.