



The journey from Thiopentone to Propofol for caesarean birth - experiences from a tertiary unit



U. Javed, K Bhatia, M Columb

Department of Anaesthesia, Saint Mary’s Hospital, Manchester, UK

Introduction

- The Royal College of Anaesthetists (RCoA) has set best practice standards for the rate of general anaesthesia (GA) use for caesarean delivery, with suggested targets of:
 - Category 1: < 50%
 - Category 2-3: < 15%
 - Category 4: < 5%
- Historically, Thiopentone and Suxamethonium are considered as the induction agents of choice for caesarean delivery in the United Kingdom (UK).
- Multiple publications now recommend using Propofol over Thiopentone on the basis of greater drug familiarity, occasional supply issues of Thiopentone and reduced incidence of syringe swap medication errors.

Method

- After obtaining audit committee approval, records of all patients having caesarean delivery at St. Mary’s Hospital, Manchester from January 1st 2021 to August 31st 2022 under general anaesthesia were reviewed.
- The general anaesthesia rates for various categories of caesarean delivery were calculated to determine whether our unit met RCoA recommended standards. The data was compared with findings of a similar audit performed between April 2017 and March 2018.
- The anaesthesia induction techniques were reviewed along with neonatal outcomes.

Results

During the study period, 5066 caesarean deliveries were recorded with 6.5% performed under a general anaesthetic. Details of the anaesthetic technique, along with the neonatal outcomes and how our findings compared with the 2017-2018 audit are highlighted in Table 1 and Fig-1 & 2.

	2017-18	2021-22	Effect Size (95% CI)	P value
General Anaesthesia	210/2524 (8.3)	331/5066 (6.5)	0.79 (0.67, 0.93)	0.0052
Opioid Pre-delivery	92/210 (43.8)	268/331 (81.0)	1.85 (1.58, 2.190)	< 0.0001
APGAR 1 min	7.0 [4.0, 9.0]	6.0 [3.0, 9.0]	1.0 (0.0, 1.00)	0.095
APGAR 5 mins	10.0 [8.0, 10.0]	9.0 [7.0, 10.0]	1.0 (0.0, 1.00)	0.019
Umbilical Artery pH	7.23 [7.17, 7.28]	7.21 [7.13, 7.26]	0.02 (0.00, 0.04)	0.022
Umbilical Vein pH	7.28 [7.21, 7.32]	7.27 [7.21, 7.31]	0.01 (-0.01, 0.02)	0.4

Table - 1 Data presented as n/total (%) or median [interquartiles]. Effect sizes are rate ratio or median difference with 95% confidence interval (CI). Analysis included Fisher Exact and Mann-Whitney U-statistics.

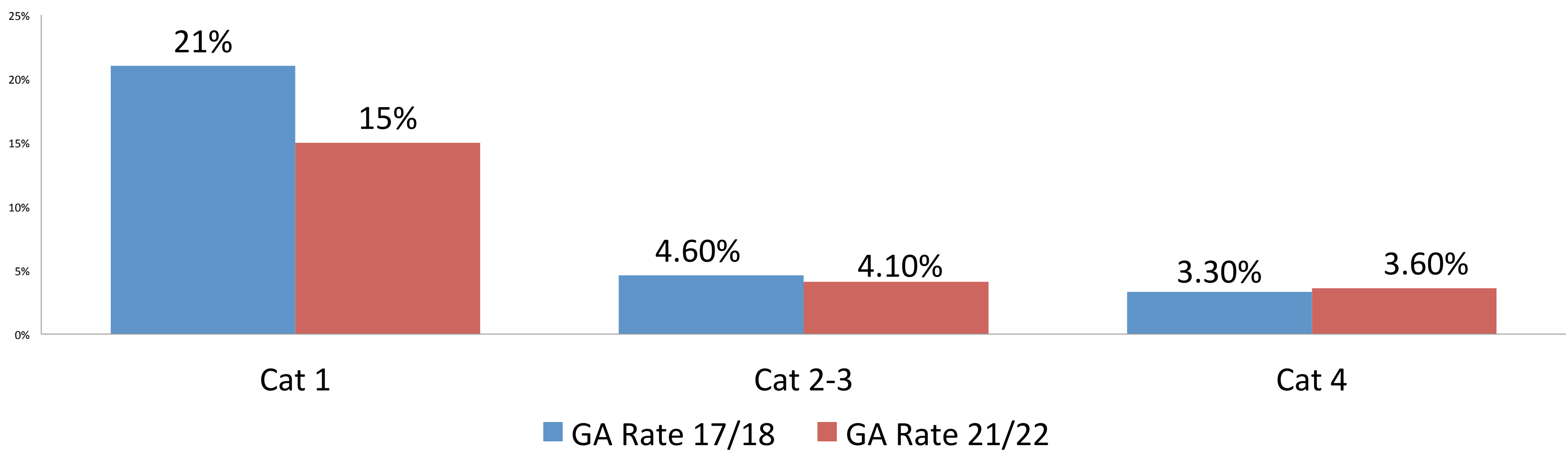


Fig.1 General anaesthesia rates across different category of caesarean delivery 2017/18 vs. 2021/22

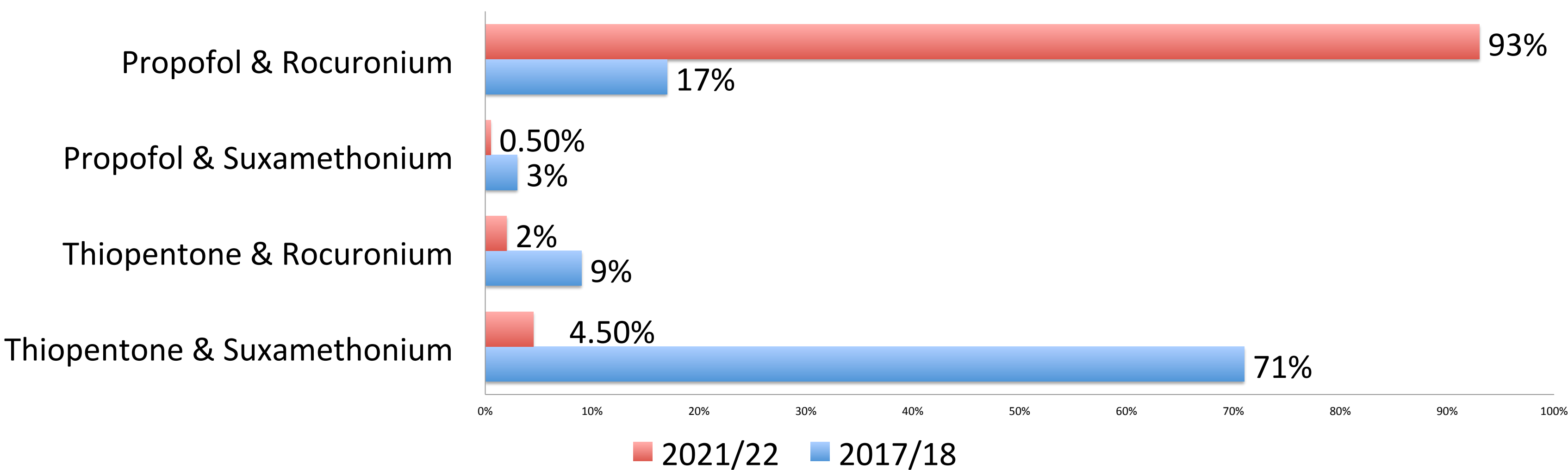


Fig.2 Comparison of general anaesthesia induction drug combinations 2017/18 vs. 2021/22

Discussion

- Our unit continues to meet best practice standards set by the RCoA for general anaesthetic use across different categories of caesarean delivery.
- There has been a marked reduction in general anaesthesia use for category – 1 caesarean delivery.
- The combinations of drugs being used for induction of anaesthesia has changed significantly since the 2017/18 study period.
- Propofol and Rocuronium is the most popular combination, observed in 93% of cases.
- Opioid use pre-delivery has increased, with Alfentanil being administered most frequently pre-delivery.
- Neonatal outcome data demonstrates lower Apgar scores and Umbilical artery/vein pH in the 2021/22 study period.
- The higher incidence of observed anaphylaxis with Suxamethonium and the increasing availability of Sugammadex has led to a shift towards use of Rocuronium as the neuromuscular blocking agent of choice for general anaesthesia in caesarean deliveries.
- Good intubating conditions can be obtained in a timely fashion for a more prolonged period of time with Rocuronium and it can also be rapidly reversed if a difficult airway or a failed intubation scenario is encountered.
- The combined impact of the use of Propfol, Rocuronium and pre-delivery opioids on this neonatal outcome data requires further research and ideally matched maternal data for the different categories of caesarean delivery to draw more meaningful conclusions.

References

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