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Evaluation of the Impact of a Preoperative Oral Paracetamol Program

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AIM

To implement an oral preoperative paracetamol program to reduce intravenous paracetamol use in our institution's operating theatre by 50% for financial and environmental savings while maintaining patient analgesic care.

BACKGROUND

The introduction of intravenous paracetamol led to a rapid increase in its use in our operating theatres, increasing fiscal and environmental costs. We implemented a standardized Pre-operative Analgesic Workflow (PAW) - oral preoperative paracetamol program for elective surgical patients which reduced cost and carbon emissions with equivalent analgesic effect.

METHODS

A workflow, approved by the Changi General Hospital Medical board after engagement with the anaesthesia department and preoperative anaesthesia clinic, commenced in 2018. Oral paracetamol was administered 30-60 minutes preoperatively on day of surgery to elective surgical patients without exclusions. The environmental and financial impacts were calculated from peer reviewed life cycle analysis and the unit costs of paracetamol. Clinic nurses, day surgical nurses and the anaesthesia team were educated on the workflow while data were analysed using Stata 18 and the ITSA package.

RESULTS

Prior to the introduction of PAW (2015-2018), a median of 30.4% of elective and emergency patients in the operating theatre received intravenous paracetamol. After the introduction of PAW, there was an immediate and sustained reduction to a median of 16.5%, with an estimated 3,000 bottles of intravenous paracetamol saved annually. This was accompanied by an increase in oral paracetamol from 2019 to 2023. (Table 1, Figure 1) This reduction led to decreased carbon emissions from a median of 194.3 to 79.9 kgCO₂ per 1000 cases and reduction in financial costs for paracetamol from a median of \$1803 to \$351 per 1000 cases. Additionally, the annual percentage of patients receiving paracetamol as part of multimodal analgesia increased from a median of 38% to 53.9% post intervention. No increase in medication errors or complications was reported.

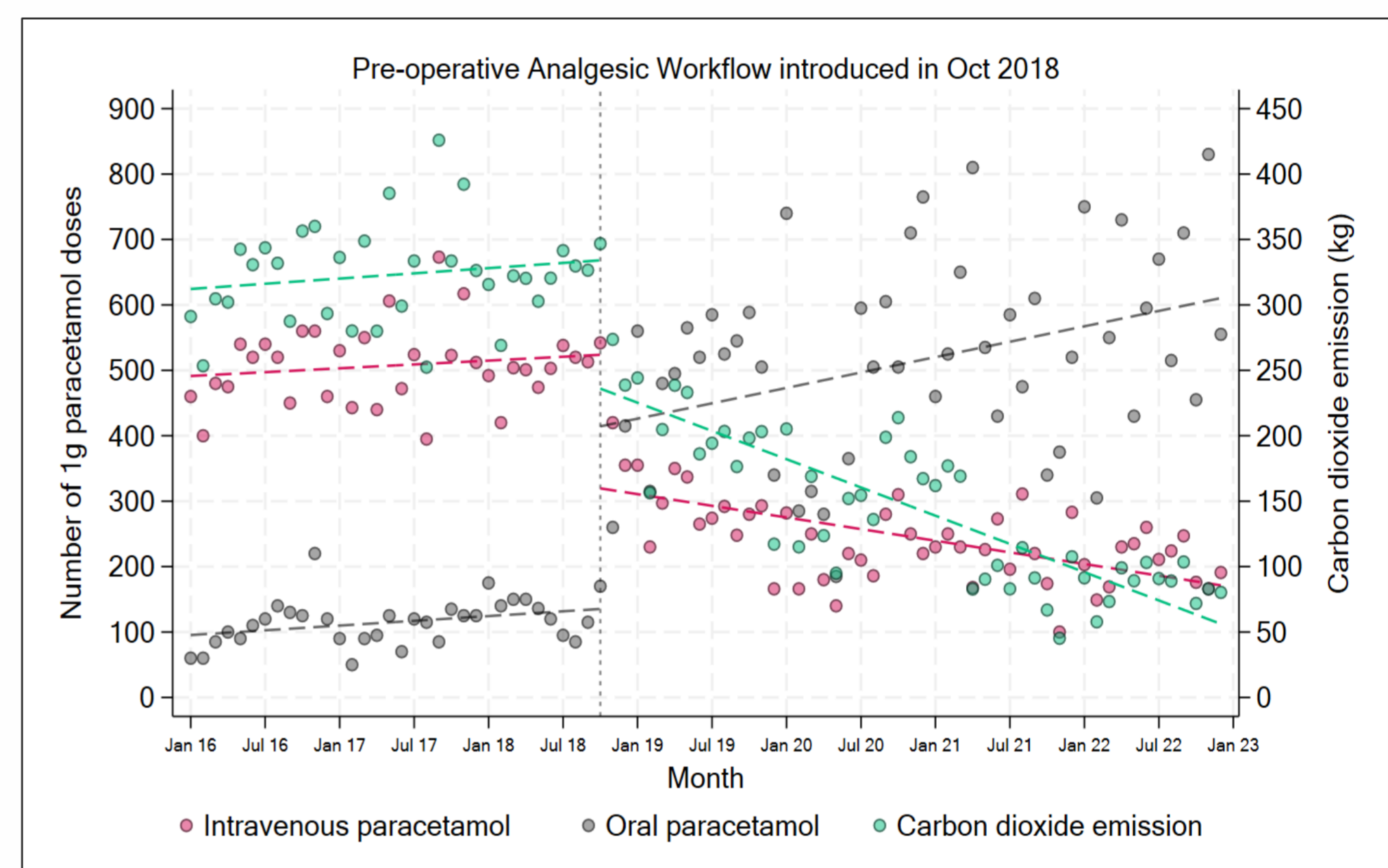


Figure 1: Monthly paracetamol doses and CO₂ emission across time from Jan '16 – Jan '23.

Year	Number of IV paracetamol bottles (caseload receiving)	CO ₂ emissions from IV paracetamol (kg CO ₂ e)
2015	4463 (24.3%)	2802.8
2016	5965 (29.7%)	3746.0
2017	6285 (33.2%)	3947.0
2018	5782 (31.1%)	3631.1
2019	3387 (18.8%)	2127.0
2020	2694 (17.0%)	1691.8
2021	2661 (16.5%)	1050.7
2022	2461 (15.2%)	762.9
2023	2410 (15.2%)	747.1

Table 1: IV paracetamol usage and CO₂ emissions from 2015 to 2023.

CONCLUSION

Implementation of a preoperative oral paracetamol program is simple and safe, reducing both the environmental and fiscal costs of paracetamol for our operating theatre without compromising patient care. The initiative has also improved the number of patients receiving multimodal analgesia with paracetamol during the perioperative period, without leading to increased complications or risks.

Reference: Reducing costs and carbon footprint for preoperative oral paracetamol: implementation of a standardised pathway
<http://doi.org/10.10106/j.bja.2024.06.033>