

Pre-operative Oral Paracetamol (PPOP) for Elective Breast Patients – a Pilot Feasibility Study and Economic and Environmental Analysis

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Paracetamol is routinely given to patients undergoing operations in both elective and emergency settings as part of multi-modal analgesia. While it is commonplace in many trusts to use pre-operative oral paracetamol, at the Royal Victoria Infirmary (RVI) it is standard to use intravenous (IV) doses of paracetamol intra-operatively. We identify three main reasons to try and change our practice at the RVI:

- **To comply with 2020 NICE guidelines** recommending clinicians “offer oral paracetamol before and after surgery, including dental surgery, irrespective of pain severity” limiting IV administration to those unable to tolerate an oral route¹.
- **To save money** – 1g of paracetamol costs 2.7p as an oral dose vs. 128.5p as an IV dose².
- **To reduce carbon dioxide emissions** in line with Greener NHS 2040 net zero aims³ – production and disposal of 1g of paracetamol produces 0.003 kgCO₂ for an oral dose and 0.193 kgCO₂ for glass bottle IV dose (64 times greater)⁴. Transport emissions can also be considered, which are calculated per tonne of goods – an oral dose weighs only 2g vs. glass bottle IV dose 208g⁴.

A literature review carried out as part of this project suggests oral pre-operative paracetamol is probably non-inferior to use of intraoperative IV doses^{5, 6}.

At the RVI trust, we carried out **23,264 day-case surgeries** in the year 2018-2019 (prior to Covid disruption) – based on the findings of the study below, we could make an annual saving of at least:

- £23,975.43
- 3625.579 tonnes reduction in CO₂ emissions from paracetamol production/disposal alone.

Act

Decision to continue protocol at present.

Potential solutions to further improve protocol following feedback:

- Increase awareness – feed back issues to anaesthetists ensuring they are aware of protocol and keeping nursing staff informed of administration times.
- Prescription issues – ensure anaesthetists are aware of how oral paracetamol can be prescribed in advance of admission on our e-record system to allow smoother implementation of protocol, particularly early in the morning. Also consideration of pre-populated online prescribing packet to speed up process for busy anaesthetists.

Present at trust and national level - gain further input within and outside trust.

Following finalisation of project – discussion with directorate with aim to expand to other day case surgeries to maximise engagement and potential savings for trust.

Plan

- **Literature review.**
- **Decision to pilot small group** of patients initially to focus efforts – adult elective day case breast surgery patients chosen, admitted to ward 45.
- **Early discussions with nurses and anaesthetists** involved with the patient cohort above to explore potential barriers and issues that had stopped the use of oral paracetamol beforehand, and how best to proceed with our project.
- **Audit of current standards** over 4 week period – only 1.9% of patients (1 out of 53 eligible cases) in this cohort were given pre-operative oral paracetamol prior to implementation of our protocol.

Study

Re-audit - showed use of pre-operative oral paracetamol had improved significantly with 61.9% of eligible cases now receiving a dose.

There was no increase in IV opioid required post-operatively for those receiving pre-operative oral paracetamol only.

Feedback - from nurses and anaesthetists revealed some issues:

- Prescription not always correct on e-record.
- Sometimes not prescribed in time for first case on list, especially if not prescribed in advance of admission.
- Nurses not always told when doses should be given.
- Some anaesthetists consistently not utilising protocol.

Economic and environmental analysis (values above) – based on findings of audit and reaudit where approx. 90% of cases would be expected to be given IV paracetamol prior to our protocol, and 7.7% of cases who were given pre-operative oral paracetamol also received IV paracetamol >4hrs after oral dose.

Do

Basic protocol developed alongside further discussion with nurses and anaesthetists:

- All eligible day case breast surgery patients >18years old on ward 45 included in trial.
- Pre-operative dose of paracetamol prescribed by anaesthetist – this could be done either during notes review before admission or during morning review on day of admission.
- Nurses to be informed of timing of oral paracetamol, aiming for 1-2 hours prior to surgery.

Posters summarising the above produced and distributed on ward and shared with anaesthetists.

4-week initial trial followed by re-audit and feedback.

Conclusions

We have shown that use of pre-operative oral paracetamol as standard is feasible within our trust.

The introduction and implementation of our basic protocol can improve the use of oral paracetamol pre-operatively within this cohort, though there are still improvements and adjustments to be made.

The use of pre-operative paracetamol can have economic and environmental benefits for the trust and the NHS, whilst providing comparable levels of analgesia for elective day-case adult patients.

All the above gives us strong evidence with which to approach the perioperative directorate for the consideration of expanding our protocol trustwide to make further savings. This coincides with new plans to develop a surgical elective day unit at the trust and can provide guidance on the planning of paracetamol premedication there – with the potential for prescription and administration to be nurse led.

References

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