

# Intravenous versus oral paracetamol: optimizing the route and cost

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## Background

Paracetamol is an effective analgesic (NNT 3.5 – 4.6) for postoperative pain. It is available orally and intravenously (IV). The IV route should only be used when the oral route is inappropriate because it is significantly more expensive than the oral formulation. The oral route avoids the risks of the IV route. The cost of IV paracetamol in one District General Hospital escalated to £271,639 for a three year period (2007 to 2010). This figure excluded the cost of the administration sets and staff time. Other centres internationally were reporting a similar rise in costs.

**Aim:** To optimize prescribing and administration of paracetamol in order to avoid adverse incidents and unnecessary costs.

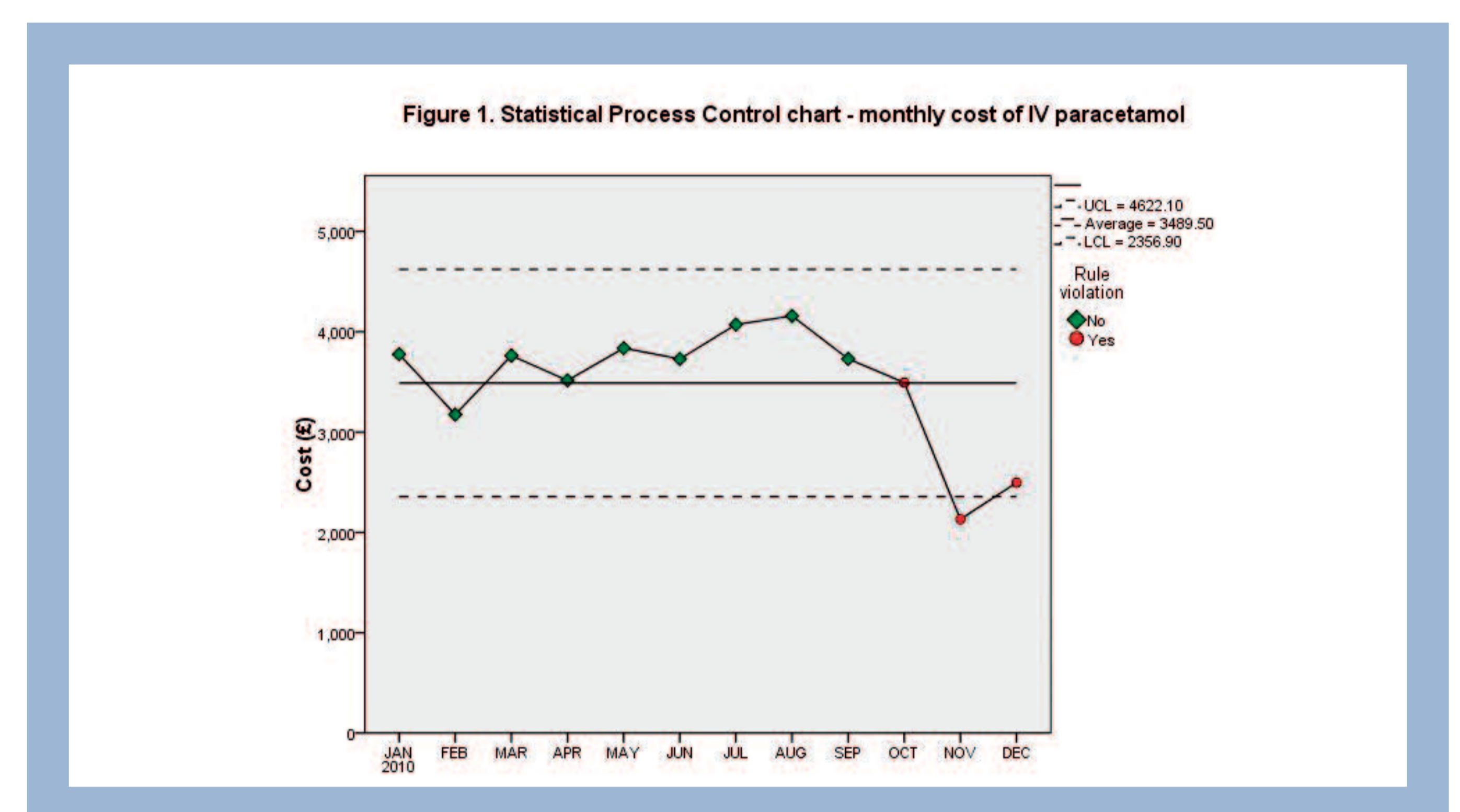
**Methods:** A rapid cycle quality improvement programme ran from June to December 2010.

**Stage 1:** We plotted the use and cost of IV paracetamol for the surgical unit starting in 2007 (3 year baseline data). We used statistical process control charts to plot data over time in order to determine if the changes we made were making a difference.

**Stage 2:** A quality improvement group including specialist nurses, anaesthetists and pharmacists met at regular intervals to implement and test a series of changes (Plan-Do-Study-Act cycle).

**Interventions:** The team prepared a PowerPoint presentation and handouts. We visited all ward areas and delivered 10-minute presentations to raise awareness of the additional costs and risks of IV paracetamol. Anaesthetists changed prescribing practice to avoid IV paracetamol. Pharmacists and clinical nurse specialists supported change with daily ward rounds.

**Results:** The monthly cost of IV paracetamol reduced significantly in the 5 month intervention period (Figure 1). The reduction in cost was maintained over the following year.



**Conclusion:** The difference in the cost between the oral and IV route remains an important consideration (£0.03 v £3.00 per day/per patient in 2013). We successfully reduced unnecessary prescribing and administration of IV paracetamol reducing drug and consumables costs and nursing time. Quality Improvement methodology can be applied in any hospital setting in order to improve patient safety and reduce associated costs.

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