



# Routes of Administering Analgesics Postoperatively: Practice vs Guidelines & Economic Implications

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## Background

- The choice of route for administering postoperative analgesia affects its efficacy and cost-effectiveness, as well as patient comfort.
- Current guidelines on postoperative care prioritize the oral route (PO) over intravenous (IV), due to its convenience, non-invasiveness, cost-effectiveness while maintaining comparable efficacy.
- The intramuscular route (IM) is discouraged.
- Immediate-release opioids are favored over modified-release formulations [1-4].

## Aim

- To evaluate whether clinical practice aligns with current guidelines regarding routes of postoperative analgesia administration.
- To explore the economic implications of any potential misalignment.

## Methods

- A secondary analysis of data collected using the PAIN OUT methodology in 10 Serbian hospitals [5].
- 2,354 adult pts who underwent various surgical procedures.
- Pts were followed-up during their stay in surgical wards for the initial 24 hours after surgery.
- We analyzed the proportion of patients receiving non-opioid and opioid analgesics via the PO, IV, and IM routes in the entire cohort and in a subgroup of patients in whom administration of analgesics via PO route was deemed feasible.
- The PO route was not considered feasible in patients undergoing gastrointestinal, pancreatic and hepatobiliary surgery except for laparoscopic cholecystectomy.
- We estimated the projected savings if the PO route was utilized instead of the IV or IM, in a subgroup of pts in whom PO route was feasible.
- Costs of analgesic therapy accounted for the medications, related disposables and staff labor.

## Results

### Analgesia administration routes in the entire cohort

- IV route was utilized for administering non-opioids in 2,043 (87%) pts and opioids in 917 (39%) pts.
- IM route was employed in 156 (7%) pts for non-opioids and 91 (4%) pts for opioids.
- Ten (1%) pts received oral analgesics, all as immediate-release formulations.

### Analgesia administration routes in pts with feasible PO route

- PO route was deemed feasible in 1,759 pts.
- IV route was employed in 1,512 (86%) pts for non-opioids and 649 (37%) pts for opioids.
- 129 (7%) pts received IM injections of nonopioids and 86 (5%) of opioids.

Table 1. Parenterally administered analgesics in patients with feasible PO route.

	Intramuscular		Intravenous	
	Number of patients	Number of injections	Number of patients	Number of injections
<b>Non-opioids</b>				
Ketorolac	1 (0.1%)	2	435 (23.5%)	789
Paracetamol	NA	NA	579 (30.9%)	670
Diclofenac	124 (6.7%)	162	251 (13.6%)	342
Metamizole	9 (0.5%)	24	677 (36.6%)	399
Ketoprofen	11 (0.6%)	18	93 (5.0%)	130
<b>Opioids</b>				
Tramadol	58 (3.1%)	83	558 (30.2%)	1369
Morphine	12 (0.6%)	12	141 (7.6%)	142
Pethidine	17 (0.9%)	26	11 (0.6%)	13

Table 2. Costs and projected cost reduction in surgical patients with feasible PO route.

Surgical Discipline	Number of patients	Cost of IV and IM analgesics		Projected cost of PO analgesics		Projected cost reduction (%)
		RSD	USD	RSD	USD	
Cardiac	228	192,877.2	1,839.55	24,970.5	238.15	87.1
General	603	345,424.8	3,294.47	78,521.7	748.90	77.3
Obstetrics & gynecology	344	171,425.2	1,634.96	49,981.1	476.69	70.8
Traumatology & Orthopedics	475	467,495.3	4,458.71	50,952.6	485.96	89.1
Urology	202	343,975.8	3,280.65	25,819.9	246.26	92.5
Sum	1850	1,521,198.3	14,508.33	230,245.8	2195.96	84.9

- Costs of parenteral analgesics averaged at 822.3 RSD (7.94 USD) per patient.
- Average projected costs of oral analgesics were 124.5 RSD (1.19 USD) per patient.
- Projected savings averaged at 85%.**

## Conclusion

- Our findings reveal a widespread reliance on IV administration for postoperative analgesics.
- The limited use of oral analgesics, especially in eligible pts, underscores a notable disparity between practice and guidelines.
- The prevalence of the IM route is cause for concern.
- Substantial projected cost savings associated with oral analgesics highlights the importance of aligning practice with evidence-based recommendations.

## References

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