

Hospital Patient Blood Management standards in Spain in major elective orthopedic surgery

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Background and Goal of Study

The effective use of guideline-based PBM interventions in clinical practice has only been partially studied around few hospitals and geographies. This study aims to describe to what extent PBM standards are consolidated in clinical practice, and its variation among hospitals in Spain, in patients undergoing major elective orthopedic surgery.

Materials and Methods

We performed a 24-month cross-sectional medical record review study, analyzing all primary elective knee (TKA) and hip (THA) arthroplasty replacement procedures performed at 42 hospitals in Spain from January 2018 through December 2019.

Data was obtained from the MAPBM hospital network database, which consists of de-identified aggregated hospital patient-level data from laboratory, pharmacy, transfusion, surgery, and administrative hospital records. To describe hospital PBM standards, we used the 3 pillars PBM clinical pathway measures along the pre, intra and postoperative stages, as defined and used by the MAPBM group¹. Results are presented as median and interquartile range.

Results and Discussion

42 hospitals with a total of 27.420 episodes, 17.427 for TKA and 9.993 for THA, were analysed. TKA patients were slightly older and with a higher proportion of women than THA. Hospital PBM standards and variability in clinical practice are presented in Table 1.

A median hospital timely screens preoperatively more than 50% of surgeries, yet the supplementary check of iron metabolism is much lesser established, almost 10%. Both TKA and THA have a similar screening practice. The timely treatment with IV iron and/or EPO stands at 10% of TKA and 15% of THA patients who are preoperatively found anaemic. Intraoperatively, a median hospital uses antifibrinolytics in 70% and 62% of its TKA and THA procedures, respectively. When transfusion takes place, the average Hb trigger at a standard hospital is 8,1 and single-unit strategy is applied in 33% of the cases.

Hospital variability was found in all PBM strategies. Within pillar 1, highest variation occurs with the use of iron metabolism markers for preoperative screening, with hospitals in the 3rd quartile applying it to up to 46% of the TKA patients, whereas those in the 1st quartile run below 5%. Similarly for pillars 2 and 3, the use of antifibrinolytics ranges 35% to 83% and transfused patients above 8 g/dl span from 33% to 74%.

PBM Intervention	TKA				THA			
	Hospital	N	Median	IQR	Hospital	N	Median	IQR
P1 % of patients with a Hb determination 21-90d before surgery	41	17063	55.3%	21.4	41	9616	56.9%	20.6
P1 % of patients with a ferritin determination 21-90d before surgery	41	17063	10.9%	41.8	41	9616	9.6%	35.7
P1 % of patients treated for anaemia preoperatively 7-90d before surgery*	35	1385	10%	30.2	34	1098	15.6%	28
P1 % of patients treated with IV iron during hospital stay	42	16347	5.4%	13.9	42	9549	8.1%	13.2
P2 % of patients under spinal anaesthesia	41	17427	86.9%	27.5	41	9993	80.4%	37
P2 % of patients treated with antifibrinolytics perioperatively	38	8808	70.5%	48	38	5996	62.2%	46.3
P3 Hb level prior to transfusion	37	1096	8.13	0.57	38	1007	8.15	0.56
P3 % of patients transfused with Hb >= 8 g/dl	37	1096	56.5%	40.6	38	1007	57.1%	27.1
P3 % of single-unit transfused patients	39	1314	33.3%	38.9	42	1298	32.6%	33

Table 1. Hospital PBM clinical pathway measures. P1-3: PBM Pillar 1, 2 and 3; TKA: Total knee arthroplasty; THA: Total hip arthroplasty; IQR: Interquartile range; (*) the erythropoietin and iron treatments considered are intravenous

Conclusion

Despite evidence and guidelines, clinical practice of PBM is suboptimal and with a wide inter-hospital variation. Further efforts are needed to consolidate the adoption of guidelines-based PBM strategies in routine hospital standards.

References

1. Bisbe E, Garcia-Casanovas A, Illa C, Varela J, Basora M, Barquero M, et al. Maturity Assessment model for Patient Blood Management to assist hospitals in improving patients' safety and outcomes. The MAPBM project. Blood Transfus. 2021