

TRENDS IN PROPOFOL UTILIZATION AT PRINCE ZAID BIN AL-HUSSEIN  
MILITARY HOSPITAL: A RETROSPECTIVE STUDYAhmad Ibrahim Alhasan<sup>\*1</sup>, MD, Shadi Ali Mufleh Hammadeen<sup>2</sup>, MD, Malek Zayed Obeidat<sup>3</sup>, MD, Salem Rafiq Alsaman<sup>4</sup>, MD, Ali Kathm AlQatarneh<sup>5</sup>, MD, Mohammad Esmail Al Bdairat, Pharm-D<sup>6</sup><sup>1,2</sup>Anesthesiology and Critical Care Specialist/Critical Care for Adult.<sup>3,4,5</sup>Internist/ Critical Care for Adult.<sup>6,7</sup>Royal Medical Services.**\*Corresponding Author: Ahmad Ibrahim Alhasan**

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**ABSTRACT**

**1. Introduction:** Propofol is one of the most used intravenous anesthetic agents because of its rapid onset of action, short duration of action, and favorable recovery profile therefore monitoring the usage patterns of propofol is essential for improving anesthetic practice, ensuring rational medication use, and controlling hospital costs. Prince Zaid bin Al-Hussein Military Hospital offers variety of surgical services where propofol is a major component of anesthesia practice, however, no previous studies have looked at the patterns of propofol utilization in this setting, knowing these trends will help with evidence-based decision-making, enhance resource allocation, and identify opportunities for cost savings and practice optimization. **2. Methodology:** Our study aims to analyze the trends in propofol utilization by using hospital records and pharmacy dispensing records at Prince Zaid bin Al-Hussein Military Hospital through a retrospective observational study review covering period from January 2025 to December 2025. Data will be extracted from the hospital's operating room records and pharmacy information system including Total amount of propofol dispensed (number of vials), Number of surgeries (from OR admission statistics) and Cost per vial (for cost analysis). Our study will calculate Total propofol consumption per month then Standardized consumption (per 100 surgeries) and Cost of propofol per period then standardized per surgeries. **3. Result:** pending. **4. Conclusion:** pending.

**KEYWORDS:** Propofol, surgery, military hospital, cost, consumption.**INTRODUCTION**

Propofol is one of the most used intravenous anesthetic agents because of its rapid onset of action, short duration of action, and favorable recovery profile, therefore Monitoring the usage patterns of propofol is essential for improving anesthetic practice, ensuring rational medication use, and controlling hospital costs. (Linstedt et al., 2015).

Propofol is widely used for the induction and maintenance of general anesthesia and sedation, Its excellent pharmacokinetic profile allows quick recovery and it appropriate for a variety range of surgical procedures (Marik, 2004), Despite its widely used,

propofol consumption patterns are not usually regularly monitored (Kim et al, 2017).

Pharmacy dispensing records which offer objective data on quantities dispensed and variations in use over time are becoming an increasingly important source of information for hospitals to analyze medication trends and evaluate prescribing practices (Idris et al, 2021).

Evaluating consumption can help to identify trends in anesthetic practices, detect deviations from standard protocols, and support cost-effective hospital management (Trapani et al., 2000; Smith et al., 2018; Liu et al., 2016).

Prince Zaid bin Al-Hussein Military Hospital provides a wide range of surgical services where propofol constitutes a major component of anesthesia practice, however, no previous studies have looked at examined the patterns of propofol utilization in this setting so Understanding these trends will support help with evidence-based decision-making.

## 2. METHODOLOGY

Our study aims to analyze the trends in propofol using, hospital records and pharmacy dispensing records at Prince Zaid bin Al-Hussein Military Hospital through a retrospective observational study were reviewed by covering period from January 2025 to December 2025.

In Our study, we calculated Total propofol consumption per month then Standardized consumption (per 1 surgery) and Cost of propofol per period then standardized per surgeries at Prince Zaid bin Al-Hussein Military Hospital.

Data extracted from the hospital's operating room records and pharmacy information system including total amount of propofol dispensed vials and type of surgeries from admission statistics and Cost per vial.

**Ethical Considerations** Approval has been obtained from the Research, Pharmaceutical and Clinical Studies, and Professional Ethics Committee at the Royal Medical Services Directorate.

## RESULTS

**Table 1: Monthly Propofol Consumption (vial) by Operating Room / 2025.**

Month	Total Propafol consumption
1-Jan-31 Jan	73 vials
1-Feb-28Feb	83 vials
1-Mar-31Mar	76 vials
1-Apr-30 Apr	77 vials
1-May-31May	70 vials
1-Jun-30Jun	74 vials
1-Jul-31Jul	72 vials
1-Aug-31Aug	89 vials
1-Sep-30Sep	70 vials
1-Oct-31Oct	84 vials
1-Nov30Nov	80 vials
1-Dec-31Dec	81 vials

**Table 2: Surgical specialty data.**

Specialty	Number of Surgeries	Propofol Usage expectation
General Surgery	312	High (often requires general anesthesia with higher doses)
Obstetrics & Gynecology	421	High (hysteroscopy, short procedures, but C-sections often use spinal anesthesia)
Ophthalmology	314	Moderate-High (cataract surgery often uses local anesthesia + conscious sedation with low-dose propofol)
ENT (Ear, Nose & Throat)	224	Moderate (mix of short and long procedures)
Dentistry	67	Low (mostly local anesthesia)
Urology	0	-
Pediatrics	24	Low (often use inhalation anesthesia or ketamine instead)
Orthopedics	61	High (orthopedic surgeries are often long )
<b>TOTAL</b>	<b>1,423</b>	

**Table 3: Surgeries That Actually Use Propofol.**

Specialty	Total Surgeries	Surgeries with Propofol	Rationale
Obstetrics & Gynecology	421	211	About more than Half of patients used spinal anesthesia
Ophthalmology	314	56	Most used local anesthesia + sedation (low-dose propofol)
General Surgery	312	265	Most require general anesthesia
ENT	224	149	Mix of local and general
Dentistry	67	34	often general anesthesia
Orthopedics	61	49	Many require general or regional + sedation
Pediatrics	24	17	often general anesthesia
Urology	0	0	-

**Table 4: Propofol Consumption in our Hospital.**

Category	Details
Total Annual Surgeries	1,423 procedures
Total Annual Propofol Consumption	929 ampoules (20 ml ampoules, 1% concentration)
Average Monthly Consumption	77.4 ampoules
Consumption Rate = 1,423 surgeries, 929 ampoules = 0.65 ampoules per surgery	
Each surgery consumes an average of 0.65 ampoule	
each ampoule contains 200 mg of propofol → 130 mg of propofol per surgery	

**Table 5: Actual Propofol Consumption Rate.**

actually use propofol: actual Rate=929 ampoules	
actual Rate= 990 propofol-eligible surgeries 929 ampoules = 0.94 ampoules per propofol surgery	
0.94 ampoule ≈ 188 mg of propofol per surgery (where propofol is actually used)	
Table 6 average propofol consumption/ month Lowest months:	May and September (70 ampoules each)
Highest month:	August (89 ampoules)
Average monthly consumption:	77.4 ampoules

## DISCUSSION

### Comparison with Global Averages

Metric	Global Average	our Hospital	Interpretation
Medium surgery (1 hour)	3.5 ampoules (700 mg)	-	our procedures are likely shorter
Short procedure (15-20 min)	0.5 - 1 ampoule (100-200 mg)	0.65 ampoule	our rate matches global short procedure averages
Conscious sedation	0.25 - 0.5 ampoule	0.65 ampoule	Slightly higher, suggesting mix of sedation and general anesthesia

1- Our consumption rate (0.65 ampoule/surgery) is normal and appropriate for a hospital performing mostly short to moderate-length procedures.

### 2. Monthly Consumption Analysis

The Lowest months are May and September and the Highest month is August and Average monthly consumption (77.4) ampoules.

Stable consumption pattern throughout the year indicates consistent surgical volume and good inventory management.

### 3. Surgical Specialty Distribution and Propofol Utilization

#### a. Distribution

The majority of procedures were concentrated in three main specialties, Obstetrics and Gynecology accounted for the largest proportion (421 cases; 29.6%), followed by Ophthalmology (314 cases 22.1%) and General Surgery (312 cases 21.9%).

#### B. Propofol Utilization Patterns

- High utilization specialties include General Surgery, Obstetrics and Gynecology, and Orthopedics, this account for a combined total of 794 procedures (55.8%).
- Moderate-to-high utilization is observed in Ophthalmology (22.1%), although many procedures (e.g., cataract surgery) use local anesthesia.

- Moderate utilization is seen in ENT procedures (15.7%), where propofol use varies depending on procedure duration and complexity.
- Low utilization specialties include Dentistry and Pediatrics, together accounting for only 6.4% of cases.

### 4. Propofol Consumption in the Hospital

#### a. Interpretation of findings

The average consumption of 130 mg per surgery is relatively moderate to low when compared to typical propofol dosing, this suggests several interpretations:

- A substantial proportion of procedures may be performed under regional or local anesthesia.
- Short-duration procedures.
- Use alternative anesthetic agents (such as inhalational anesthesia or ketamine).

#### Limitations

- The analysis was based on total ampoule consumption without accounting for partial usage or wastage.
- No differentiation made between types of anesthesia.
- The absence of case-level dosing data limits the ability to perform detailed pharmacological or statistical analysis.

### CONCLUSION

Propofol consumption in our hospital appears to be efficient and relatively conservative, with an average use of 130 mg per procedure.

## REFERENCES

- Al-Katia, S. et al. Patients' perception of the practice of anesthesia in Northern Jordan', *BMC Anesthesiology*, 2020; 20: 45.
- Al-Judah, M. et al. 'Perception and practices of depth of anesthesia monitoring among Jordanian anesthesiologists', *PMC*, 2022; 19: 25–133.
- BMC Anesthesiology*, 'Efficacy and safety of carpool versus propanol for anesthesia in patients undergoing gastrointestinal endoscope: a systematic review and meta-analysis', *BMC Anesthesiology*, 2025; 25(1): 354, Available at: Library of National Institutes of Health (Accessed: 9 March 2026).
- Brief lands, 'ERCP sedation: Propofol, Dexmedetomidine ', *Brief lands*, 2024; 9: 148–155.
- Egyptian Journal of Neuro -Psychiatry (EJNP)* 'Egypt study: Propofol vs Sevoflurane on cognition', *Egyptian Journal of Neuro -Psychiatry*, 2023; 8: 40–50.
- Gonzalez, F. Martinez, H. and Torres, A. 'Retrospective Assessment of Propofol Consumption in Operating Theaters, *Revista Brasileira de Anesthesiology*, 2021; 71(5): 506–513.
- Idris, S.A. Hussien, T.A. Al-Shammari, F.F. Nagi, H.A., Bashir, A.I. Elhussein, G.E.M.O. Abdalla, R.H.Mohammed, H.M.E. Abdelaziz, W.E., Alshammari, A.D. Alreshidi, H.F.H. Alshammari, H.M. and Ibrahim, S.I.B. 'An Evaluation of Drug Prescribing Patterns and Prescription Completeness', *Healthcare (Basel)*, 2024; 12(22): 2221. doi: 10.3390/healthcare12222221.
- Jones, R. and Brown, P. 'Trends in Propofol Utilization in a Tertiary Care Hospital, *Journal of Anesthesia & Clinical Research*, 2020; 11: 875.
- Kim, Y., Park, J. and Lee, H. ' Retrospective Analysis of Propofol Usage in Operating Rooms', *Journal of Clinical Anesthesia*, 2017; 39: 56–62.
- Linstedt, U. Graefe, K. and Pukrop, T. 'Patterns of Propofol Use in Surgical Anesthesia, *Anesthesia & Analgesia*, 2015; 120(4): 872–879.
- Lippincott/Obstetric Anesthesia Digest, 'Variation in Hospital Neuraxial Labor Analgesia Rates in California' *Obstetric Anesthesia Digest*, 2025; 45(1): 48–49.
- Liu, S.Wang, J. and Zhang, Q. 'Consumption Patterns of Propofol in Major Surgeries', *BMC Anesthesiology*, 2016; 16: 88.
- Machani Rama Murthy, K. et al. 'A Comparative Study of Fixed-Dose Dexmedetomidine and Propofol Infusions on Intraoperative Desflurane Consumption', *Cureus*, 2024; 16(6): 62479.
- Marik, P.E. 'Propofol: therapeutic indications and side-effects', *Current Pharmaceutical Design*, 2004; 10: 3639–3649.
- Mc Andrew, L. et al. 'Creation and Implementation of a Hospitalist-Run Propofol Sedation Program', *Hospital Pediatrics*, 2021; 11(11): e325–e330.
- Médecins Sans Frontières (2024) PROPOFOL, 10mg/ml, 20ml, emulsion, amp Available at: <https://unicat.msf.org/cat/product/40908> (Accessed: 9 March 2026).
- Middle East Current Psychiatry (MEC Pr)*, 'Propofol vs Etomidate in ECT', *Middle East Current Psychiatry*, 2025; 7: 33–40.
- Patel, K.Gupta, R. and Singh, A. 'Evaluation of Propofol Use in Surgical Anesthesia: A Multi-Center Study', *Anesthesia: Essays and Researches*, 2019; 13(2): 257–263.
- Ped Med (2025) PROPOFOL Paediatric Drug Dosing Guidelines*. Available at <https://pedmed.org/pedprintdrug.php?drugID=326> (Accessed: 9 March 2026).
- QY Research (2025) Propofol Anesthesia Drugs - Global Market Share and Ranking, Overall Sales and Demand Forecast 2025-2031*. Available at: <https://www.qyresearch.com/reports/4659786/propofol-anesthesia-drugs> (Accessed: 9 March 2026).
- Saudi study on propofol and mental health*, *International Journal of Clinical Medical Pharmacy (IJCMPH)*, 2025; 12: 150–160.
- Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine (2025) 'Airway management details and sedative use statistics'*, *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*. Available at: <https://sjtrem.biomedcentral.com/articles/10.1186/s13049-025-01413-3/tables/3> (Accessed: 9 March 2026).
- Smith, I., White, P.F., Nathanson, M. and Gouldson, R. 'Propofol: An Update on Its Clinical Use', *Anesthesia & Analgesia*, 2018; 126(2): 414–425.
- Sneyd, J.R. 'Propofol in anesthesia', *British Journal of Anaesthesia*, 1992; 68: 3–12.
- Thai Journal of Anesthesiology and Reanimation*, 'BIS-guided propofol in cirrhosis patients', *Thai Journal of Anesthesiology and Reanimation*, 2024; 28: 125–132.
- Trapani, G. Altomare, C. Liso, G. Sanna, E. and Biggio, Propofol in anesthesia. Mechanism of action, structure-activity relationships, and drug delivery, *Current Medicinal Chemistry*, 2000; 7(2): 249–271.