Indonesian Journal of Interdisciplinary Research in Science and Technology (MARCOPOLO)
Vol. 3, No. 7, 2025 : 819 - 824

Evaluation of Emergency Trolley Medication Usage in the Emergency Department of the Pharmacy Installation at Hikmah Sawi Mother and Child Hospital

Sarah Zielda Najib[1*], Jamila Hamidi Yanti[2]
[1]Akademi Farmasi Yannas Husada Bangkalan
[2]RSIA Hikmah Sawi Bangkalan
Corresponding Author: Sarah Zielda Najib Czellda@gmail.com

A R T I C L E I N F O

Keywords: Emergency Trolley, Emergency Medication, Drug

Received : 02 June 2025
Revised : 26 June 2025
Accepted: 29 July 2025

A B S T R A C T

The importance of providing emergency equipment or fully stocked trolleys in hospital as part of ongoing efforts to improve the quality of services. Emergency trolleys are a vital component in patient care in the emergency department (ER). The method used is observational using qualitative analysis by collecting data on drug use in emergency trolleys in period April to June 2025. The most frequently used drugs are lidocaine 2%, Ephinephrine injection, calcium gluconate, $MgSO_4$ 20 %, $MgSO_4$ 40% and D40%. The $MgSO_4$ 20 %, $MgSO_4$ 40% are the most used drug in emergency trolleys. The used of drugs in emergency trolley has been carried out in accordance with the regulation in force in the hospital.

DOI: https://doi.org/10.55927/marcopolo.v3i7.115
E-ISSN : 2986-8009
https://esaformosapublisher.org/index.php/marcopolo

INTRODUCTION

The drug supply chain, consisting of planning, procurement, receiving, storage, distribution, control, and evaluation, forms part of the medication management process to ensure the availability of safe and high-quality medicines (Saputra et al., 2024).

Providing fully stocked emergency trolleys in hospitals is important for continuous quality improvement of services, especially in emergency departments. These trolleys, typically located in Intensive Care Units (ICUs), Operating Rooms (ORs), Inpatient Wards (IWs), and Outpatient Clinics (OCs), contain emergency medications and medical supplies (Putri & Cholisah, 2023).

The emergency trolley (or crash cart) is a vital component for patient management in emergency departments (ED). This trolley contains medical equipment and medications used in emergency situations, which must be fully stocked, well-organized, and readily accessible to medical staff at all times (Ministry of Health Malaysia, 2019). The preparedness of emergency trolleys directly impacts the speed and accuracy of emergency response, consequently influencing patient survival outcomes (Alquraini et al., 2018). When patients experience sudden and unexpected clinical deterioration, the emergency trolley provides the necessary equipment and medications for such critical situations. Immediate intervention or resuscitation must be performed as these emergencies may potentially lead to fatal outcomes or long-term health complications (Dinata & Rosmiati, 2020).

Effective management of emergency trolleys includes routine inventory checks, complete documentation, periodic restocking of supplies, and staff training on proper usage, as outlined by international standards from the World Health Organization (WHO, 2021) and national accreditation requirements from the Hospital Accreditation Commission (KARS, 2022).

LITERATURE REVIEW

The foundational theory underpinning emergency trolley medication management is rooted in the design of a closed loop medication use system, aligned with the classic "six rights" of administration (right patient, drug, dose, time, route, and documentation), which together aim to minimize error and maximize patient safety. In this model, every touchpoint from prescription to administration is traced and verified through clearly defined feedback loops, which reduces the potential for adverse drug events. The institutional medicationuse cycle, as mandated by national pharmacy standards, further reinforces this framework by embedding pharmacy-led coordination throughout the medication life cycle, from selection and procurement to disposal, ensuring each step supports rational, safe practice.

The concept of the emergency trolley or crash cart is anchored in theory that rapid access to life saving drugs and devices is nonnegotiable in highrisk settings such as emergency departments. The trolley must be stocked according to standardized protocols that prescribe specific drug categories (e.g. cardiac drugs, anticonvulsants, epinephrine) and must be physically positioned to respond within seconds to a code blue scenario. Crucially, theory dictates that the trolley be routinely sealed and restricted, accessible only by authorized

persons (e.g. nursing in cooperation with pharmacy), to preserve integrity and readiness.

The regulatory framework laid out in Indonesia's Ministry of Health regulations (Permenkes No. 58/2014 and subsequently 72/2016) outlines a cyclical system for emergency drug management theory. Key procedures include: selection and formulary alignment; quantification for buffer stock; procurement; strict inventory control; immediate restocking after use; shelf life monitoring; and periodic audit of expired or damaged items. Notably, the standard requires that used or expired medications be replaced promptly, and that stock levels be recorded and evaluated at least monthly to maintain continuous readiness.

Under theory and regulation, pharmacy installation is designated as having "one door" responsibility for all hospital medication and medical consumables. This centralized governance model authorizes the pharmacy department to oversee emergency trolley provision, mandate formularium decisions, and coordinate with medical and nursing staff through a Pharmacy and Therapeutics committee or its equivalent. Through such integration, the pharmacy can also institute multidisciplinary drills, training, and drills that reinforce the safety protocol and reduce risk.

Within a theoretical layout model, the contents of the emergency trolley must be arranged to facilitate rapid identification and use. Drugs subject to high alert protocols or those with look alike sound alike (LASA) names are segregated and clearly labeled to avoid confusion. Organizing the trolley according to clinical priority such as airway/breathing/circulation (ABC) compartments rational drug positioning and labelling supports cognitive streamlining, reducing front-line clinician burden under pressure.

Finally, theory mandates that emergency trolley management be embedded within a broader quality assurance system. This includes routine stock-op charting, seal-and-log controls, expiry checks, use records, and incident reporting (e.g. for missing items, incorrect doses used, delayed restocking). Theoretical models for medication safety emphasize that such audits and periodic evaluations not only maintain trolley readiness, but also generate feedback for continuous improvement, reinforcing policy revisions and supporting accreditation readiness.

METHODOLOGY

This study employed an observational method with qualitative analysis by collecting data on emergency trolley medication usage in the Emergency Department of Hikmah Sawi Mother and Child Hospital from April to June 2025. Data were gathered through direct observation by identifying and comparing the most frequently used medications each month. The collected data were then analyzed to evaluate usage patterns.

RESEARCH RESULT AND DISCUSSION

As a mother and child hospital, Hikmah Sawi Hospital has a strategic role in handling maternal and neonatal emergencies. Therefore, evaluation of emergency trolley management in the ED is important to ensure optimal

availability of emergency equipment and medications, as well as to ensure medical staff understand and can use the trolley according to applicable hospital standards. The purpose of this study is to evaluate emergency medication usage in the emergency department and monitor medication availability in the emergency trolley. The emergency trolley at Hikmah Sawi Hospital is available in 2 locations: the emergency department and ICU, but the most frequently used medications are from the ED trolley, so this study focuses on emergency medication usage in the ED.

Table 1. Medication Usage in Emergency Trolley

No	Medication Name	Quantity Used		
		April	May	June
1	Lidocain 2%	5	3	1
2	Ephineprine inj	3	2	0
3	Norephineprine HCl inj	2	0	0
4	Ca. Gluconate inj	2	0	0
5	Furosemide Inj	1	0	0
6	Amiodaron inj	0	0	0
7	Dopamin inj	0	0	0
8	Atropin Sulfate inj	0	0	0
9	Dobutamine inj	0	0	0
10	Diazapam inj	0	0	0
11	MgSO20%	12	8	5
12	MgSO40%	15	10	10
13	D40%	1	0	1

From Table 1, it can be observed that the most frequently used medications each month were 2% lidocaine, epinephrine injection, calcium gluconate, 20% $MgSO_4$, 40% $MgSO_4$, and 40% dextrose (D40%). The data in Table 1 indicate that the highest usage during the April–June period was for 20% $MgSO_4$ and 40% $MgSO_4$, with peak consumption occurring in April (12 and 15 ampules, respectively). In subsequent months, 20% $MgSO_4$ and 40% $MgSO_4$ remained the most utilized medications, though the quantities were lower than in April.

Preeclampsia, a high-risk obstetric condition threatening maternal and fetal safety, can be mitigated through appropriate interventions, including $MgSO_4$ administration (full initial dose) to reduce the risk of progression (Azizah & Palupi, 2019). For mild preeclampsia, methyldopa is highly effective, whereas severe preeclampsia requires nifedipine and magnesium sulfate ($MgSO_4$) as effective anticonvulsants. $MgSO_4$ acts by reducing peripheral resistance through inactivation of myosin kinase chains, thereby lowering blood pressure and enhancing arterial relaxation (Hasimun & Sukmawati, 2024).

Lidocaine 2% was the second most frequently used medication after MgSO4 from April to June, with usage of 5 ampules, 3 ampules, and 1 ampule respectively. Lidocaine is used for anesthesia during both vaginal delivery and cesarean section through nerve blockade (Lechat et al., 2023). It is also employed for anesthesia in normal vaginal deliveries to prevent pain during perineal tear suturing (Maksura et al., 2025). The most commonly used analgesics for vaginal deliveries are lidocaine and mefenamic acid tablets, while ketorolac and

mefenamic acid are typically used for cesarean section patients (Widyapuri, 2024).

All medications used from the emergency trolley are documented and reported to the pharmacy department, where the data on utilized medications are entered into the system upon receiving the report; subsequently, pharmacy staff replenish the used medications in the exact quantities and secure the trolley with a new single-use lock, as the completeness of emergency trolley contents constitutes a fundamental aspect of emergency management, with WHO (2021) emphasizing that emergency trolleys must remain ready for use under all circumstances since they serve as the first line of defense during cardiac arrest, respiratory arrest, shock, or seizures, while routine monitoring of emergency trolley medications is conducted weekly according to the hospital's standard operating procedures, except when there are reports of medication usage from the trolley.

The proper management of emergency medications as life-saving drugs serves as a key indicator in efforts to improve healthcare quality, particularly in emergency services (Sari & Sandi, 2023). The use of disposable double locks on emergency trolleys, which are easily accessible, is critical to prevent theft of trolley contents (Abdulkadir et al., 2021). Monitoring of emergency trolley medications is conducted weekly by pharmacy staff, as these medications are rarely used but must still be regularly checked. According to Indonesian Ministry of Health Regulation No. 72 of 2016, a crucial aspect of emergency medication management is periodic verification by the pharmacy department as the responsible managing unit (Abdulkadir et al., 2021), a practice already implemented through routine checks by the pharmacy team.

Figure 1. Emergency Department Trolley

CONCLUSION AND RECOMMENDATIONS

The use of medications from the emergency trolley adheres to the hospital's established protocols. Management practices are effective and comply with all relevant guidelines for medication handling within the unit. Responsible personnel conduct periodic supervision to verify documentation and medication stocks in the emergency trolley.

Recommendation

The hospital should maintain attention to trolley storage conditions and strive to sustain the current well-functioning management system.

ADVANCED RESEARCH

Future research could explore the effectiveness of current supervision methods in ensuring long-term compliance with medication management protocols for emergency trolleys. Specifically, studies could assess whether the frequency and thoroughness of inspections correlate with reduced medication errors or improved response times during emergencies. Additionally, comparative analysis across different hospital units or institutions may reveal best practices that could be standardized. Incorporating staff feedback and identifying potential gaps in training or documentation systems could further enhance the overall safety and efficiency of emergency medication management.

REFERENCES

Abdulkadir, W., Tuloli, T. S., & Pakaya, A. (2021). Gambaran Pengelolaan Emergency Kit (Trolley) Di Rumah Sakit Umum Daerah (RSUD) dr . Hasri Ainun Habibie. *Indonesian Journal of Pharmaceutical Education*, *1*(1), 47–56. https://doi.org/10.22487/.ijpe.vli

Azizah, S., & Palupi, J. (2019). Resiko Pemberian Mgso4 Dosis Awal Full Dose Pasien Preeklamsi Pada Tindakan Persalinan Sectio Caesaria. *Malang Journal of Midwifery*, *1*(1), 39–46.

Dinata, W. putri siska, & Rosmiati, M. (2020). Evaluasi Pemakaian Emergency Trolley Di Bangsal Intensive Care Di Salah Satu Rumah Sakit Swasta. *Journal of Pharmacy Student*, *2*(1), 39–44.

Hasimun, P., & Sukmawati, I. K. (2024). Analisis Penggunaan Obat Antihipertensi pada Ibu Hamil di Rawat Inap RS Bandung. *Prosiding Seminar Nasional Diseminasi*, *4*, 36–46.

Lechat, T., Aprigny, T., Henriot, J., Arthur, J., Sylla, D., Bénard, A., & Gaulain, K. N. (2023). Quick Epidural Top - up with Alkalinized Lidocaine for emergent caesarean delivery (QETAL study): protocol for a randomized , controlled , bicentric trial. *Trials*, *24*, 1–12. https://doi.org/10.1186/s13063-023-07366-1

Maksura, H., Husna, A., & Saleha, S. (2025). Asuhan Kebidanan Persalinan Pada Ibu S G1p0a0 Dengan Laserasi Jalan Lahir. *Jurnal Kesehatan Almuslim*, *XI*(1), 28–34.

Putri, A. Y., & Cholisah, E. (2023). Evaluasi Pengelolaan Emergency Trolley Terhadap Pasien Gawat Darurat. *Journal of Telenursing*, *5*(2), 4014–4019.

Saputra, Y. D., Lisi, F. H., Wiweko, A., & Mulyaningsih, K. (2024). Evaluasi Penerimaan Dan Penyimpanan Obat Di Instalasi Farmasi Rsud Patut Patuh Patju. *Akfarindo*, *9*(2), 123–132.

Sari, O. M., & Sandi, D. A. D. (2023). Pelaksanaan Pengelolaan Troli Emergensi di Ruang Rawat Inap Salah Satu Rumah Sakit di Kalimantan Selatan. *Jurnal Inovasi Farmasi Indonesia*, *4*(2), 6–13.

Widyapuri, S. A. (2024). *Analisis Efektivitas Obat Analgetik Pada Pasien Pasca Partus Pervaginal dan Sectio Caesarea Menggunakan Visual Analog Scale di RSUD Cilacap*. Universitas Muhammadiyah Purwokerto.