

PERFORMANCE ASSESSMENT OF AUTOMATED DISPENSING SYSTEMS IN THE HANDLING AND CONTROL OF HIGH-RISK MEDICATIONS

J. CASTAÑO, A.I. FAURA, N. JIMÉNEZ, M.D.L.M. MARTÍN, M. AZNAR, M.A. CASTRO

HOSPITAL PHARMACY, HOSPITAL UNIVERSITARIO PONIENTE, ALMERIA, SPAIN.

AIM AND OBJECTIVES

To evaluate the quality of dispensation performed by automated medication dispensing systems (AMDS) in managing high-risk medications (HRMs).

BACKGROUND AND IMPORTANCE

AMDS have improved HRMs management, but challenges in transaction accuracy and patient identification persist.

METHODOLOGY

- A retrospective observational study analyzed HRM dispensations recorded by AMDS from January 1 to August 31, 2025, in a tertiary hospital.
- The study included all HRMs stocked in four AMDS (Omniceil®) in the ICU, Surgical Block (SB), Observation (OBS), and Emergency Department (ED). HRMs were classified by therapeutic group.
- Variables collected included total dispensations (TD), dispensation to identified patients (ID) and dispensation to generic patient profiles (GP).



RESULTS

THERAPEUTIC GROUP	OBS			ICU			ED			SB		
	TD	ID(%)	GP(%)	TD	ID(%)	GP(%)	TD	ID(%)	GP(%)	TD	ID(%)	GP(%)
Adrenergic Agonists (IV)	163	23.9	76.1	158	98.1	1.9	45	84.4	15.6	582	29.4	70
General Anesthetics (Inhaled/IV)	395	24.3	75.7	4032	98	2	-	-	-	2454	33.2	63.5
Adrenergic Antagonists (IV)	118	26.3	73.7	105	100	0	7	14.3	85.7	200	26.5	66.5
Antiarrhythmics (IV)	289	22.2	76.5	360	100	0	167	19.8	80.2	920	32.2	67.8
Anticoagulants (O)	644	44.4	55.3	8	100	0	12	25	83.3	-	-	-
Antidiabetics (O)	37	32.4	67.6	-	-	-	-	-	-	-	-	-
Neuromuscular Blockers	55	20	80	372	100	0	-	-	-	874	58.2	18
Heparins	1834	42.6	57.4	1732	97.6	2.3	443	23	77	108	26.9	73.1
Other Antithrombotic Agents	2	0	100	-	-	-	-	-	-	-	-	-
Inotropes (IV)	349	35.8	64.2	14	100	0	32	3.1	96.9	12	50	0
Opioids	2406	39.2	60.8	1580	99.3	0.7	1584	27.9	65.5	2782	34.6	65.4
Sedatives (IV)	2435	30.9	69.1	903	95.3	5	4181	23.2	79.3	889	3.3	7.6
Hypertonic Glucose ($\geq 20\%$)	141	24.1	75.9	93	97.8	0	56	26.8	73.2	22	22.7	77.3
Thrombolytics- Fibrinolytics	29	48.3	51.7	20	100	0	-	-	-	-	-	-
Insulins	51	29.4	70.6	-	-	-	-	-	-	14	100	0
Other	591	26.4	74.8	178	100	0	21	19	81	219	57.1	42.9
TOTAL	9539	35.2	76.1	9555	98.1	1.9	6548	24.6	75.4	9076	33.2	66.8

CONCLUSION

AMDS demonstrate efficient management of HRMs, with a high proportion of dispensations linked to identified patients, especially in critical areas such as the ICU. However, the presence of dispensations associated with unidentified patients in other units, along with discrepancies in transactions, highlights the need to strengthen controls and procedures to improve traceability and safety in the administration of HRMs through AMDS.

