



# Medication Inventory Optimization & Environmental Impact: Anesthesiology's Perspective



H. CLIFFORD<sup>2</sup>, A. MILBURN<sup>1</sup>, S. CHOKSHI<sup>1</sup>, S. LIU<sup>1</sup>, J. MARKLEY<sup>1</sup>, P. UPADYA<sup>1</sup>  
1. St. Joseph's University Medical Center  
2. Rutgers Robert Wood Johnson Medical School

INTRODUCTION

- Healthcare costs result from a complex combination of expense, waste and medication errors
- We must reassess healthcare at multiple levels to limit expenses
- One significant source of waste is unused medications left to expire, which has negative impacts on the environment and poses a threat to patient safety
- To address this, we audited perioperative medication inventory for department-specific utilization rates

METHOD

- 33 automated medication dispensing cabinets (AMDCs) across 5 departments were evaluated over 28 weeks for stock and usage to determine department-specific demand
- Parameters monitored:
  - Total medication usage
  - Maximum amount used in one day
  - Average daily use
  - Number of days the medication ran out of stock
- Interprofessional collaboration with the Pharmacy department determined:
  - Per unit cost of medications
  - Calculated annual expenditure
  - Identified areas for stock adjustment

| Medication                                            | Daily Avg # of Vials Used | Initial Par Level | Cost Per Vial | Removed From                              | Total Cost of Inventory | Annual Savings from Preventing Expiration | Historical # vials expired per year |
|-------------------------------------------------------|---------------------------|-------------------|---------------|-------------------------------------------|-------------------------|-------------------------------------------|-------------------------------------|
| Propranolol 1 mg/1 mL                                 | 0                         | 107               | \$9.32        | SDS 1-5, OR 1-12, OR PACU, Endo 5&6       | \$997.24                | \$239.06                                  | 25.65                               |
| Trimethobenzamide 200 mg/2 mL 2 mL vial               | 0                         | 20                | \$42.73       | Endo 1-4                                  | \$854.60                | \$267.06                                  | 6.25                                |
| Vecuronium 10 mg/1 vial                               | 0.095                     | 103               | \$4.63        | SDS 1-5, OR 1-12, OR PACU, Endo 5&6, NITV | \$476.89                | \$439.46                                  | 94.92                               |
| Lidocaine 2% epi MPF1:200,000 1 vial/20 mL 20 mL vial | 0.005                     | 36                | \$16.72       | OR 1-8, 12                                | \$601.92                | \$117.04                                  | 7                                   |
| Chorionic gonadotropin human 10,000 unit/1 vial       | 0                         | 2                 | \$213.03      | SDS Main                                  | \$426.06                | \$159.77                                  | 0.75                                |

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RESULTS

- Multiple medications were stocked at high inventories in areas where usage was rare, or not at all, leading to significant waste and expense
- Infrequently used medications were evaluated for consolidation into a central location, rather than stocked individually in each OR
- Based on this, inventory adjustments were implemented to reflect minimally used medications
- Medications not used within their respective AMDCs were evaluated for removal via discussion between the Anesthesiology and Pharmacy departments

OUTCOMES

- Data reanalyzed 10 months post-implementation showed a **\$5,287.53 cost savings** from on-hand inventory after removing unnecessary medications (**eliminating 696 vials** from AMDCs)
- Compared to historical data over 4 years (7/2020-7/2024), we calculated an annual expected savings of \$1,828.88 from preventing medication expiration, thus saving an average of 332 vials from being wasted annually in subsequent years
- Targeted medication stewardship** can enhance resource efficiency, reduce waste, and foster more environmentally friendly stocking practices
- Establishing an **interprofessional collaboration** serves as a precedent for continued efforts to develop both financial and environmentally sustainable practices