

AUDITS ON MEDICATION PREPARATION AND ADMINISTRATION: A CROSS-SECTIONAL OBSERVATIONAL STUDY IN A MOTHER-AND-CHILD UNIVERSITY HOSPITAL CENTER

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CONTEXT AND INTRODUCTION

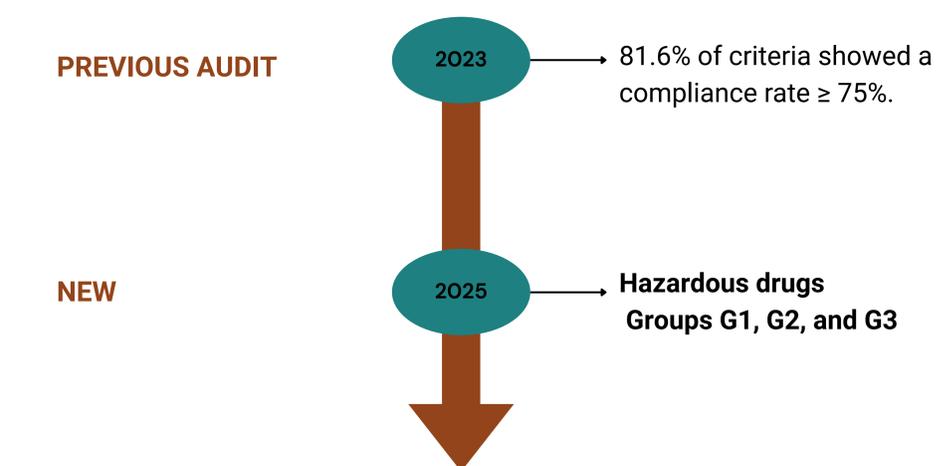
The medication-use process involves numerous steps and multiple professionals. This complex pathway can lead to medication errors.

Nurses intervene at the final stage of the medication circuit. Periodic audits help ensure quality and patient safety.

Safe management of the medication circuit is a key hospital priority and is subject to specific requirements from Accreditation Canada.

Setting

- Canadian mother-and-child university hospital
- 500 acute care beds
- 72 outpatient clinics
- 3 day-care units



OBJECTIVES

- To assess compliance with medication preparation and administration practices in a Canadian mother-and-child university hospital
- To identify key areas requiring improvement.

METHODS

Study design: Cross-sectional observational study

Study period: 3 months (April–June 2025)

Team:

- Coordinated by the pharmacy department (two pharmacists and two pharmacy residents)
- In collaboration with two nurse managers
- 42 auditors assigned to 21 care units

Sample:

- 436 direct observations

Variables:

- Standardized checklist with 82 criteria covering preparation, administration, hygiene, labeling, documentation, and handling of hazardous drugs (G1, G2, G3)

Procedure:

- Audits of healthcare professionals across all shifts (day, evening, night)
- Compliance for each item rated on a three-level scale (Compliant, Non-compliant, Not applicable)

Analysis plan:

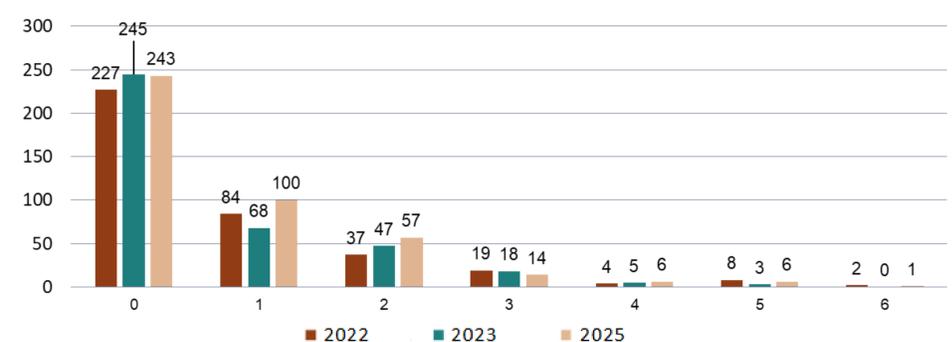
- Data analyzed using descriptive statistics and compared with previous audits (Student's t test and chi-square test, $p < 0.05$)
- Compliance rate calculated by variable and as a mean (%)
- Observation time recorded in minutes



RESULTS

- Compliance rates ranged from 37% to 100%, with 75.6% of criteria achieving a rate \geq 75%.
- **General characteristics**
 - Professionals: nurses (82.5%)
 - Routes of administration: enteral (52.3%) and parenteral (47.7%)
- **Highest compliance rates:**
 - Selection of the correct medication (100%)
 - Double check (98%)
 - Use of smart pump libraries (98%)
 - Verification of expiration date and drug integrity (97%)
 - The double check (89% on average for 8 criteria)
 - The management of post-preparation and post-administration waste (85% on average for 2 criteria)
 - The steps related to administration, prior to meeting the patient (94% on average for 13 criteria)
- **Recurrent weaknesses:**
 - Cleaning of the work surface (37%)
 - Communication of adverse effects (44%)
 - Hand hygiene after handling hazardous drugs (41%)
 - Verification of patient or parent understanding (66%)
 - Verification of dose appropriateness based on the patient's weight or body surface area (50%)
 - Use of the syringe-to-syringe connector during preparation (63%)
 - Presence of the route of administration on the label (63%)
- **For hazardous drugs (G1–G3) – representing 9% of observations – several critical steps showed low compliance:**
 - Cleaning of the preparation surface (19%)
 - Proper use of personal protective equipment (49%)
 - Use of appropriate preparation areas (72%)
- **Interruptions were absent in 57% of observations but occurred one or more times in 43% of cases.**

Figure 1: Number of interruptions during medication preparation over the years



DISCUSSION

- Compliance has now reached a plateau, reflecting a high level of performance while highlighting the need to maintain ongoing improvement efforts.
- The results were presented to all audited units, providing an opportunity to discuss continuous improvement actions to be implemented in each setting.

CONCLUSION

- The audit shows a high overall level of compliance and the consolidation of good practices but highlights some persistent gaps.
 - Improvement priorities include:
 - Handling of hazardous drugs
 - Hand hygiene
 - Cleaning of work surfaces
 - Management of interruptions
 - Communication with patients
- Targeted actions addressing these areas are needed to strengthen medication-use safety and enhance compliance with Accreditation Canada standards.

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