

Seven months of experience with a robotic system for sterile chemotherapy compounding: activity, performance and limitations

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Introduction

- **Background** : Automation of chemotherapy compounding → **safety, traceability and better use of staff time**
- **Kiro Isolator®**: a two-arm robot inside an isolator, handling in a **single cycle 10 bags/elastomeric pumps, 8 syringes and 12 vials**. **Gravimetric control at every step.**
- **Objective** : To report 7 months of use of the **Kiro Isolator®** (Grifols) in the compounding unit of a **cancer center**.

Material and Methods

Retrospective analysis, July 2025 – January 2026

Data sources : Kiro® software, Chimio®, statistics provided by Grifols

Criteria analyzed:

- overall activity of the unit
- robot-compounded preparations
- drugs involved
- non-conformities
- operator training
- organizational impact

Discussion and Conclusions

Feasibility confirmed in routine practice: **27.5% of activity robot-compounded over 7 months**. Organizational benefit: **strenuous preparations taken off the staff, technicians working autonomously, production planned ahead**. **No gain in throughput**: the **robotic cycle is longer** than manual compounding. **Technical dependence and contamination risk** : business continuity plan and microbiological monitoring needed. **Optimization**: select the drugs that make cycles efficient and monitor performance continuously.

Results

Figure 1. Share of robot-compounded activity

Total unit activity: 19,797 preparations (July 2025 – January 2026)

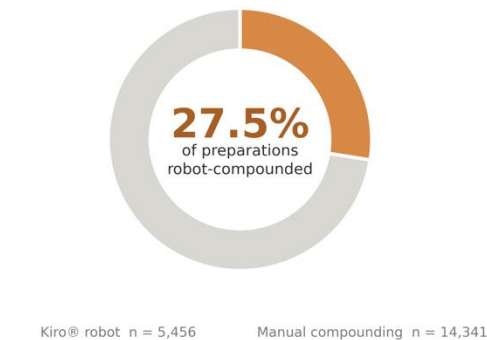
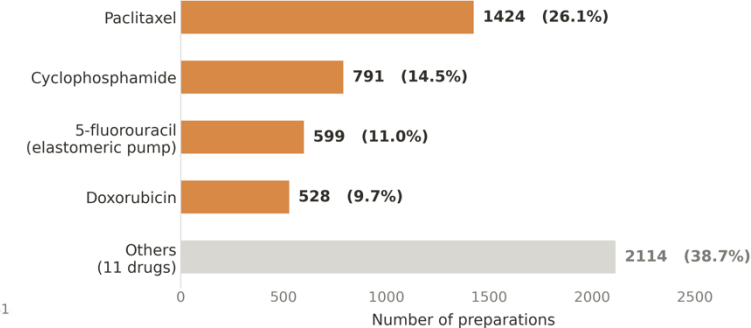


Figure 2. Drugs handled by the robot

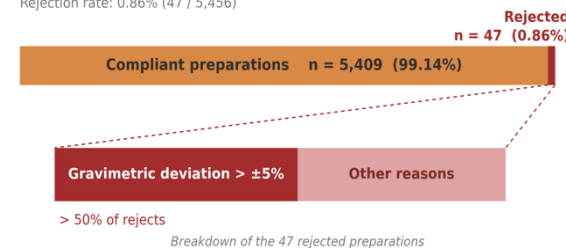
15 drugs — n = 5,456 preparations



Selection driven by: viscous products • large volumes • long reconstitution • anticipated production

Figure 3. Non-conformities of robot-compounded doses

Rejection rate: 0.86% (47 / 5,456)



- Output: **median 42 preparations/day** (Q1-Q3 30-50), **cycles of 6.8 preparations**, release at the end of each cycle, **available within ≈ 60 min**
- Time per preparation: **7.4 min vs 4.1 min with Drugcam®**
- Training: 3 technicians, **1 week each**
- Drugs excluded: pembrolizumab, bevacizumab, cytarabine, Etopophos® (**inefficient cycles**)
- Incidents : 5 days of downtime; 1 environmental contamination (half-day shutdown)