Reduction of Drug Returns: Optimizing the Online Medical Ordering and Pharmacy System

Site: Warszawski Uniwersytet Medyczny (WUM), Warsaw, Poland.

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Why did you start?

Problem Description

The hospital faces significant challenges with the high volume of drug returns due to expired medications. This inefficiency arises from miscommunications between the hospital ordering system and the pharmacy, leading to over-ordering and delayed stock adjustments. The hospital ordering system is used by clinical departments to request medications from the hospital pharmacy via a digital platform, enabling stock management within the hospital.

Prior to the intervention, medications that were used infrequently or prescribed on a case-by-case basis were routinely stocked on wards. Due to limited visibility of usage patterns and expiry dates, these items were often ordered in standard quantities and retained in ward stock, even when demand was low. This resulted in medicines expiring before use, particularly those not required for routine dialysis care.

Specific Aims

Following the SMART Goals framework, the project aimed to:

Specific: Integrate the online medical ordering system with the hospital pharmacy to reduce the number of expired medicine returns.

Measurable: Achieve at least a 20% reduction in expired drug returns, as determined by comparing the quantity of returns before and after system optimization.

Achievable: Utilize existing IT infrastructure and leverage the expertise of pharmacy and clinical staff to implement the integration.

Relevant: Addressing expired drug returns will enhance financial efficiency, reduce waste, and improve inventory management—key priorities for hospital operations.

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Time-bound: Complete the integration and achieve measurable results within 6 months of project initiation.

What did you do?

Context

The optimization initiative for reducing drug returns was initially introduced within the Nephrology Department, which serves approximately 1,000 patient-days per month. This setting provided an ideal environment to test and refine the integrated online ordering and pharmacy system due to its high volume and the critical nature of medication management.

Intervention

This change project involved two complementary components: technical system integration and behavioural interventions through training.

Technical integration: The online medical ordering system was synchronized with the pharmacy's inventory software to enable real-time stock updates, improved demand forecasting, and notifications regarding medication expiry dates.

Process redesign: Existing ordering and returns workflows were redesigned to reduce inefficiencies and miscommunication. This included the introduction of automated alerts for near-expiry medications and streamlined processes for returning unused stock.

Staff Training and Engagement

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•Training programmes: Training sessions were delivered to pharmacy and clinical staff to support adoption of the new system, including guidance on updated workflows, system use, and inventory management.

•Feedback mechanisms: A structured process was established to collect ongoing feedback and provide support, enabling issues to be addressed promptly.

Roll-out and Implementation

Following initial implementation, the integrated system was introduced within the Nephrology Department and subsequently rolled out across internal medicine departments. This phased approach enabled the establishment of standardized practices and the collection of feedback, supporting system robustness and scalability. Once refined within internal medicine, the optimisation was expanded to surgical departments, where similar challenges in inventory management and drug returns were present.

This stepwise implementation strategy ensured that each department's unique requirements were considered, minimised disruption, and supported improvements in the efficiency and sustainability of the drug ordering and returns process.

Implementation Phases

A structured action plan guided implementation and consisted of three phases:

Phase 1: Preparation (January – June 2025)

•A baseline assessment of drug return rates and workflow inefficiencies was conducted.

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•IT and pharmacy teams collaborated to design the system integration.

•The ordering system was enhanced and integrated with pharmacy inventory management software.

•The system was piloted in a controlled environment to ensure stability and functionality.

•Training materials were developed and stakeholders were informed of upcoming changes.

Phase 2: Implementation (July – August 2025)

•The integrated system was deployed within the Nephrology Department.

•On-site technical support was provided during rollout.

•Updated ordering and returns workflows were implemented.

•Data collection on expired drug returns began.

•Feedback was collected from key staff.

Phase 3: Monitoring and Continuous Improvement (September – December 2025)

•Data analysis was carried out comparing pre- and post-implementation drug returns.

•Qualitative feedback was evaluated to assess improvements in workflow efficiency and staff satisfaction.

Measures

Patient outcomes:

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Patient outcomes were not formally measured. Indirect effects on medication availability and safety were assessed qualitatively based on observed changes in stock management practices following implementation.

Environmental sustainability:

Reduction in expired medications based on observed changes in ward stock and pharmacy returns.

Economic sustainability:

Qualitative assessment of cost savings associated with reduced expiry and avoided procurement of unused medications, as baseline quantity data were not available.

Social Sustainability:

Staff satisfaction and workflow efficiency were assessed to evaluate the impact of the system.

What did you find?

Results

Patient outcomes:

Although the intervention focused primarily on reducing expired drug returns, improved stock management indirectly enhanced patient care. Key medications no longer expired on the ward. As a result, medication availability was more reliable, minimizing the risk of treatment delays or administering expired medications.

Environmental sustainability

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Before integration, expired medication returns represented a recurring waste stream. After implementation, the number of expired units of chronic-use medicines dropped to zero.

While the exact volume of avoided waste could not be quantified, this reduction is expected to decrease environmental impact not only by avoiding disposal of expired medicines but also by preventing unnecessary production, packaging, and supply of medications that are no longer required. The majority of the environmental burden of pharmaceuticals is associated with their production and supply, meaning that avoiding unnecessary procurement is likely to represent the largest environmental benefit in this intervention.

Economic sustainability

The reduction in expired medications led to avoided financial losses associated with unused stock. Previously, expired medications represented preventable waste within the pharmacy budget.

Social sustainability

Staff reported improved workflow predictability, reduced frustration related to missing or expired stock, and increased confidence in the ordering system.

What does it mean?

Summary

The integration of the online ordering system with the pharmacy inventory platform led to a reduction in expired medications, improved workflow efficiency, and enhanced staff satisfaction.

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Key contributors to success included:

- Consistent leadership support for IT integration,
- Structured staff training and engagement,
- Clear communication channels between pharmacy and clinical staff,
- Automated alerts and real-time stock visibility.

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