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Introduction

In 2007, the Maltese National Health System (NHS) implemented the Pharmacy-Of-Your-Choice (POYC) scheme where patients receive free medication for their chronic conditions through private community pharmacies. Patients must be registered with a specific community pharmacy and be eligible for free medication available under a closed-formulary system for free medication. The medicines are procured through government-owned entities and distributed to community pharmacies. Patients or caregivers collect a supply for 56 days at a time. After 5 years of its implementation, the national audit office identified a total worth of \$87,379 of expired/damaged medications from the POYC scheme.

Community pharmacists are meeting patients every two months, when patients collect the refill. Patient medication history for chronic medications received on the POYC scheme is documented in the electronic patient file accessible at the community pharmacy. This scenario makes the community pharmacists well positioned to perform clinical interventions related to medication therapy management that support patient safe and rationale use of medications. Ensuring rationale use of medicines and compliance contributes to cost-savings and improves the green footprint as related to pharmaceutical waste.

Aims

- To quantify the extent of pharmaceutical waste which was generated at the patients' end for chronic medication collected for free from the pharmacies.
- To quantify waste returned at the community pharmacies for disposal within a period of 56 days.
- To identify how clinical interventions by the community pharmacist can improve reduction of pharmaceutical waster and contribute to sustainability of the scheme.

Method

The study was split into a three-part study: medicine adherence study, medicine return investigation and pharmacist questionnaire. The tools developed were validated by a panel of 5 experts and 2 lay people and the study was approved by the FREC ethics board.

Medicine Adherence Study

This part of the study was performed to assess how much medication is leftover after a period of 56-days. Forty-three patients satisfied the inclusion and exclusion criteria and were selectively allocated to control and intervention groups. On the day of collection, the intervention group partook in the NO TEARS medicine review¹. The medication review in the NO TEARS process is structured to be easy and efficient and can be applied in a community pharmacy setting: Need/indication, Open questions, Tests, Evidence, Adverse effects, Risk reduction, Simplification/switches.

Both groups of patients were instructed to use medication only dispensed on the first day of collection which was dispensed in a brown bag. After 56-days, all patients from the control and intervention group during the refill, a tablet count was carried out to quantify the medication leftover after the period of 56 days. During the tablet count, questions were asked to identify any issues relating to adherence and to ensure patient safety.

Medicine Return Investigation Study

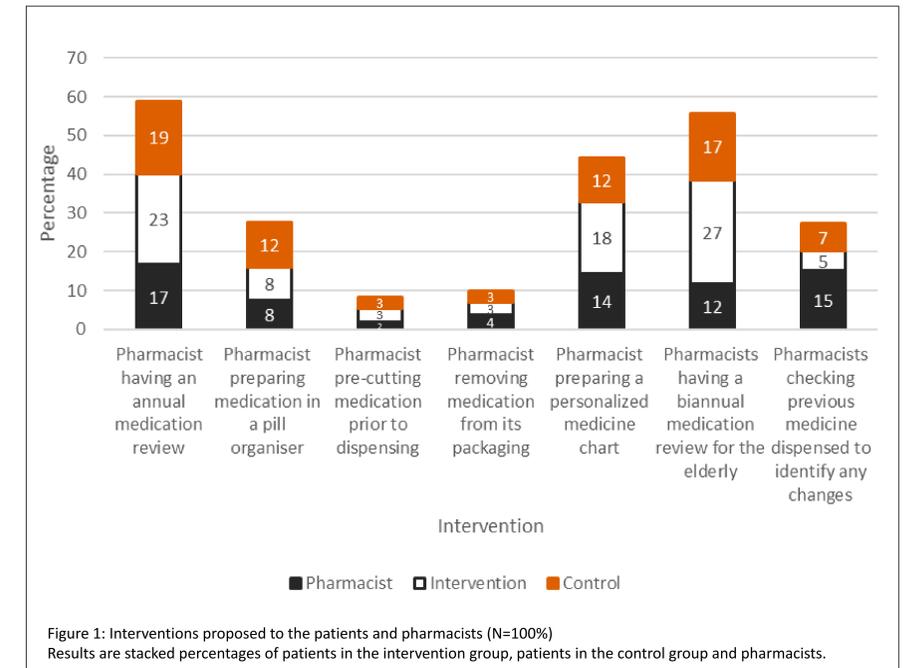
A medicine return investigation study was carried out in two community pharmacies to quantify how much medication was being returned for disposal during a period of 56 days.

Pharmacist questionnaire

A pharmacist questionnaire was developed, validated and distributed across the country. The questions in the tool were developed to identify the perspective of community pharmacists regarding POYC and waste generation.

Results

After 56 days, the **Medicine Adherence Study** identified a 4.26% improvement in leftover medication between the intervention and control group (p-value= 0.045). After a period of 56 days, the medication leftover was collectively estimated to cost \$4,120 for both the intervention and group. The estimated cost of the medication returned for disposal in the **Medicine Return Investigation Study** was \$6,776 for both pharmacies over a period of 56-days. When a list of interventions was proposed to the patients and pharmacists participating in the study, the medicine review was the most popular intervention chosen by pharmacists (50.3%) and patients (intervention group: 70%; control group: 56.5%) (figure 1). The **Pharmacist Questionnaire** identified willingness of pharmacists to implement and participate in clinical interventions to improve patient access to medications and reduce pharmaceutical waste.



Conclusion

Pharmaceutical waste has negative implications, both financially and environmentally. A medicine review which focuses on improving patient education, specifically to emphasise the consequences of non-adherence, could reduce leftover medication by 4.26%. This reduction could potentially contribute to save \$56,460 (95% CI: \$7,430- \$105,490) annually for every 1000 patients receiving 5 medications on the NHS scheme. Improving adherence would improve patient's quality of life by reducing hospitalizations or morbidity due to non-adherence and also reduce pharmaceutical waste. The clinical intervention by the community pharmacist contributes to improving sustainability while ensuring patient-centered care.

Reference

Lewis T. The NO TEARS review tool. BMJ 2004; 329: 434. <http://www.bmj.com/content/329/7463/43>