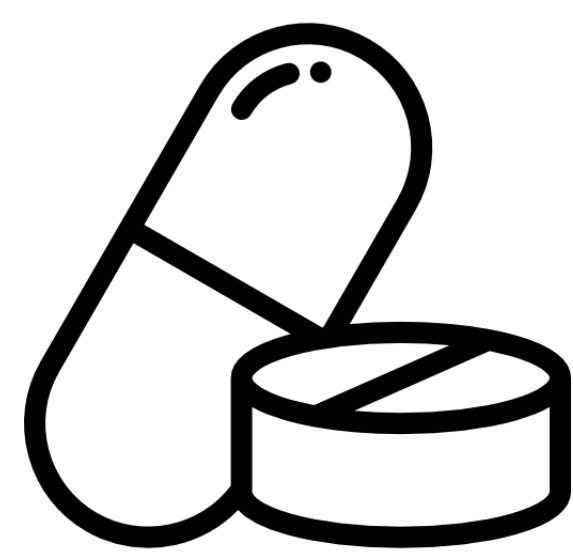# 90% reduction of medication waste by reusing returned medication from medical wards

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1) What was done?

In our large teaching hospital we distribute medication for individual patients, for the next 24 hours (Picture 1). Because a large amount of distributed medication is returned to the pharmacy, we designed and implemented **a simple new process to reuse returned** medication.
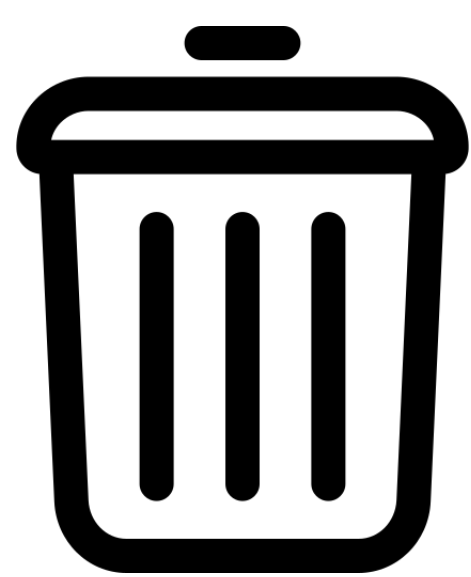
2) Why was it done?

30% of daily distributed medication for individually patients was **not administered** and returned, because:
- Lack of need (clinical performance)
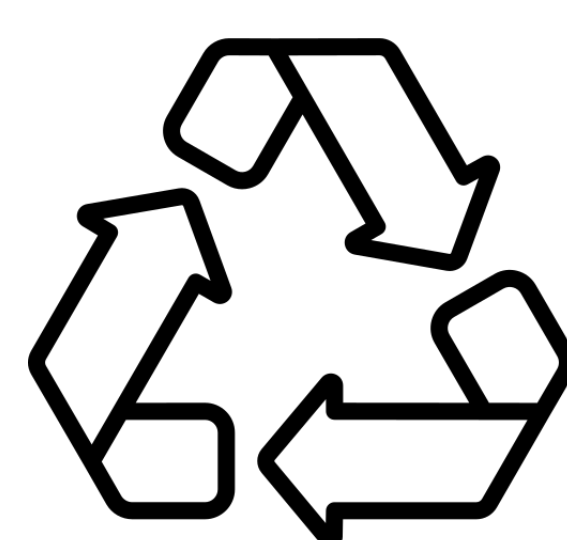- Discontinuation of prescription
- Early discharge

Standard **procedure is to discard** this medication when the patient is discharged or the prescription is discontinued, because restocking the medication could lead to safety-concerns, like mix-ups.

Picture 1: Filling cabinets
Medication is distributed every 24 hours using filling cabinets which contain about 250 medicine that are frequently used. Every patient-bed has two medication drawers, one in the pharmacy and one on ward, that are swapped in the evening.

Picture 2: Return boxes
Returned medication is placed in front of stock medicine in separate return-boxes.

3) How was it done?

We designed a new process to reuse returned medication and performed a **prospective risk assessment.** We identified three major risks and defined the following safety measures:

Risk 1) Mix-ups
- Use 'return-boxes' that are separated from original stock, so employees are aware of higher risk on mix-ups (Picture 2)
- Apply barcode labels on every single unit, by using a barcode multiplier, so every unit is barcode-verified (Picture 3)

Risk 2) Expired medication
- Duplicate barcode labels from the Falsified Medicines Directive (FMD)-code, which includes an expiration date
- If no FMD-code is present: use yellow (instead of white) labels for extra alertness on expiration date
- Increase frequency of checking on expired medication

Risk 3) Non qualitative packaging
Returned medication can be damaged by the nurse, resulting in packages that lack information, like name or strength, and also blisters can be slightly opened
- Every unit that is restocked is checked upon our quality criteria, before reuse is possible

Picture 3: Stand-alone barcode duplicator
By scanning the FMD-code on the original package, duplicate 2D-barcodes are generated and printed. FMD-codes include article number (GTIN), expiration date, serial number (for FMD) and lot-number.
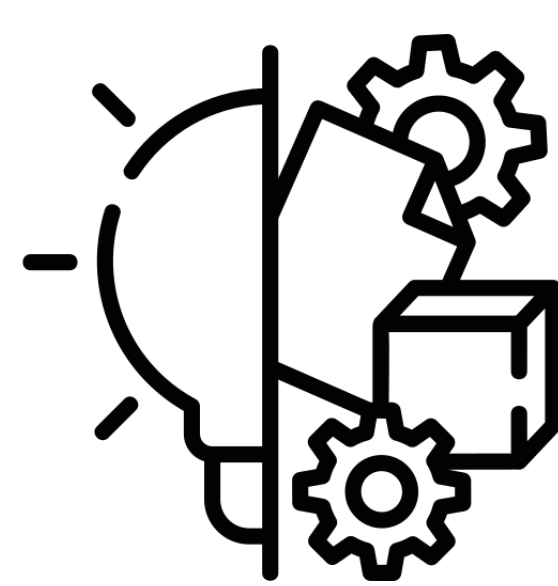
4) What has been achieved?

We implemented this process in January 2023 and measured our waste on two different days, before and after implementation.

Our totals of two days of counting:
295 units/day on average were discarded <u>before</u> implementation
34 units/day on average were discarded <u>after</u> implementation
This is a reduction of about 90%.

By analyzing of our distribution system of 2023 we estimated that we **reused about 218.000 units** (~ 70.000€)

It took about 5-15 minutes extra time each day on a total of 7 employees. No extra personnel was deployed.

5) What is next?

Save non-filling cabinet medication
- About 5% is not reused, despite it meets quality criteria
- This 5% is not included in the assortment of the specific filling cabinet, but withdrawn from a larger separate stock
- Restocking this medication includes updating the inventory management system and requires additional personnel
- We are investigating how to define a process to reuse this medication also, like the other 90%

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