

# IMPROVING YIELD AND REDUCING WASTE: OPTIMIZING ORAL LIQUID PACKAGING TO ENHANCE EFFICIENCY AND SUSTAINABILITY IN HOSPITAL PHARMACY PRACTICE

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## BACKGROUND AND IMPORTANCE

### The Importance of Yield

- **Efficiency:** Key indicator for process performance and cost control.
- **Compliance:** Mandatory requirement for Good Manufacturing Practices (GMP).
- **Resource Management:** Vital for optimizing scarce resources in public health settings.

### The Clinical Context

- **Setting:** High-complexity, large-scale, public teaching hospital (HCLPTH).
- **Standard:** Institutional yield target set at 97%.

### The Problem

- **Oral Liquid Line:** Consistently performing below target.
  - **2022:** 95.5% yield.
  - **2023:** 95.9% yield.

## AIM AND OBJECTIVES

To optimize unidose packaging (UP) for oral liquids, increasing production yield and reducing waste.

## MATERIAL AND METHODS

### Study Setting & Data

- **Location:** Pharmacy Department of a HCLPTH.
- **Period:** 2022 – 2024.
- **Scope:** All production orders for oral liquid medications.
- **Currency:** All financial data converted to Euros (€).

### Metrics & Calculations

- **Production Cost:** Unit cost and total value of losses.
- **Efficiency:** Calculated via Percentage Yield formula:

$$\text{Percentage Yield} = \frac{\text{Actual Yield}}{\text{Theoretical Yield}} \times 100$$

### Root Cause Analysis

- **Tool:** Ishikawa Diagram (6M analysis) (Figure 1).
- **Finding:** Identified packaging sealing failure as the primary cause of loss (Figure 2).

### Quality Improvement Intervention (2024)

- **Market Survey:** Sourced new Unit Packaging (UP) options (Figure 2).
- **Pilot Phase:** Sample acquisition and pilot batch production.
- **Evaluation:** Comparison of yield, cost, and total savings (Reduction in losses).

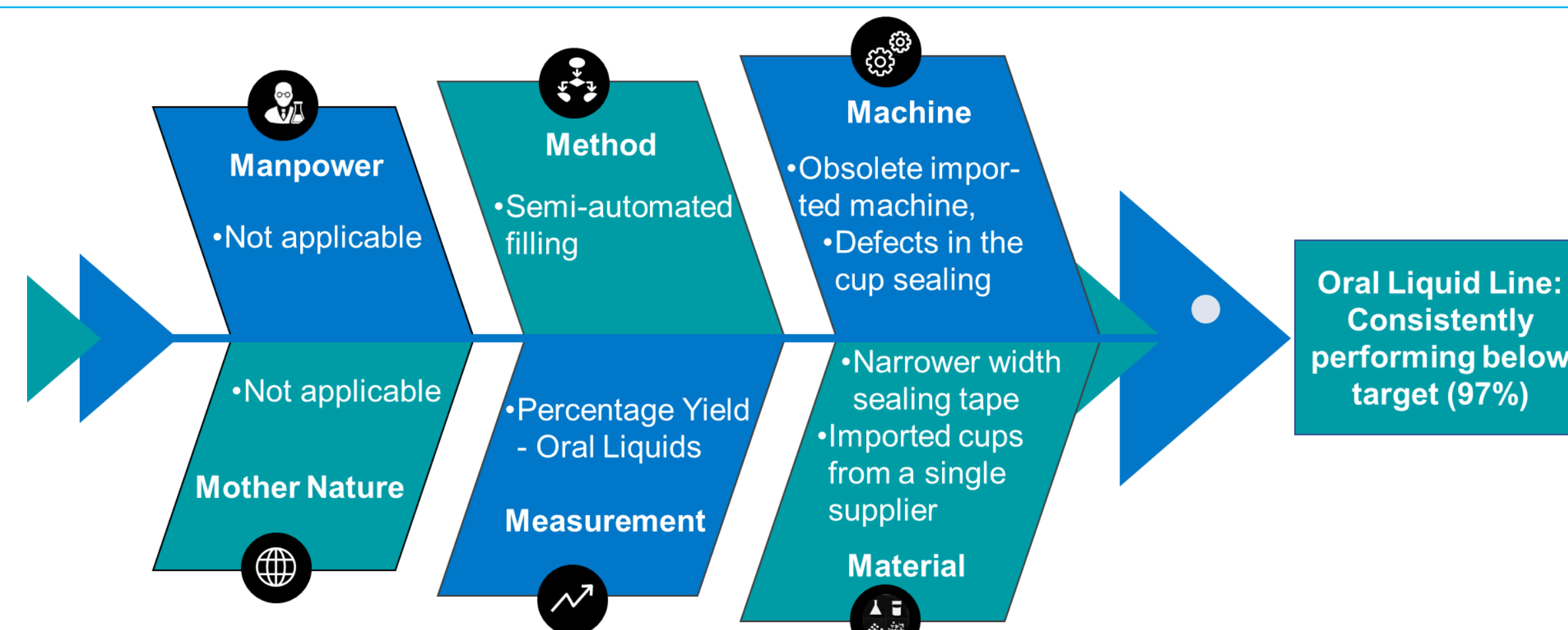
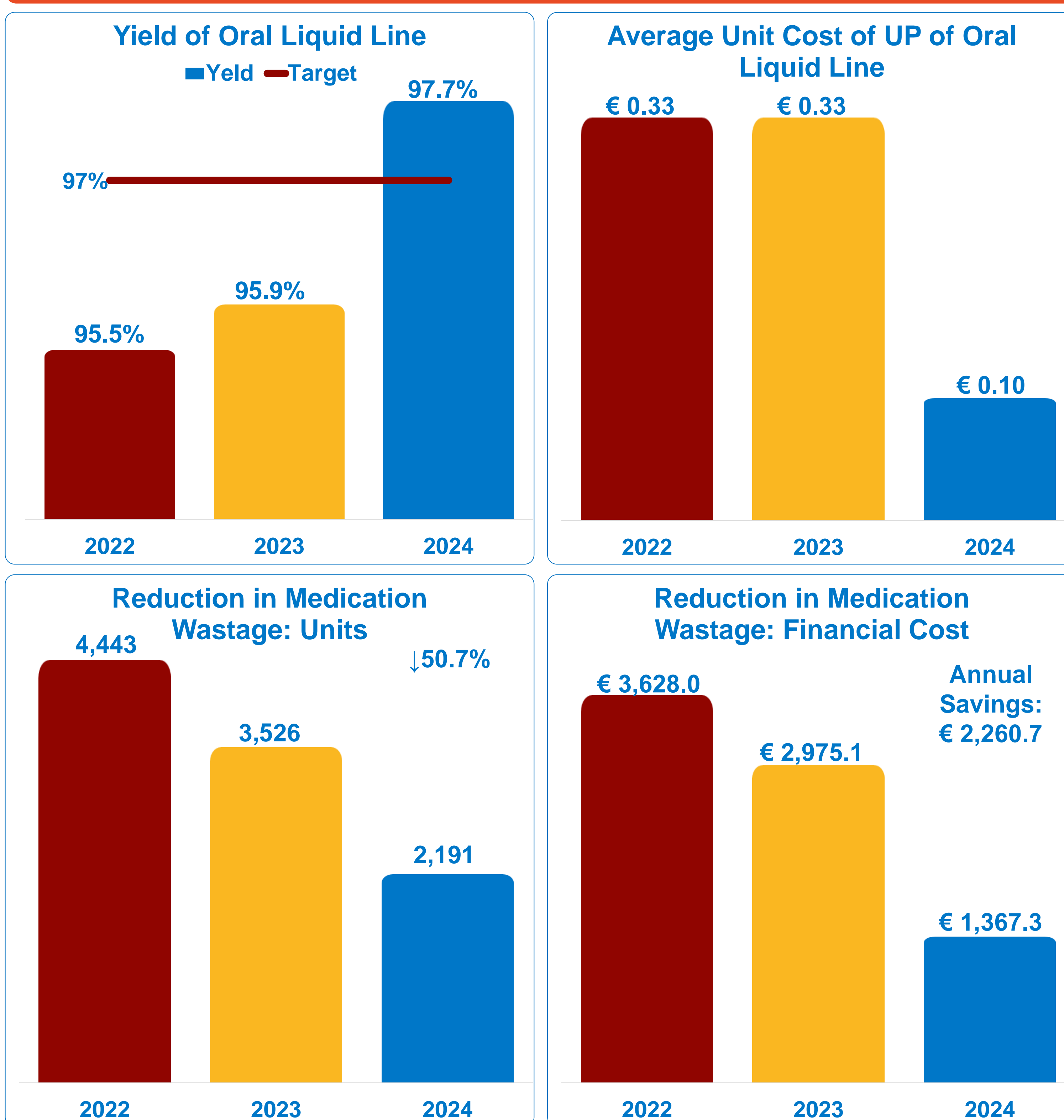


Figure 1. Ishikawa Diagram (6M analysis).



Figure 2. Packaging sealing failure and new package.

## RESULTS



## CONCLUSION AND RELEVANCE

- **Impact:** Significantly increased process efficiency and sustainability.
- **Cost-Benefit:** Simple, low-cost implementation.
- **Scalability:** Highly replicable for other hospital compounding services.

### References

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