

REDUCTION OF PLASTIC WASTE AND COST BY BRIDGING NASAL CANNULA COMPATIBILITY IN ENDOSCOPY SUITES AND POST-ANESTHESIA RECOVERY UNITS

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INTRODUCTION

- Low-flow nasal cannulas with CO2 monitoring capabilities are commonly used intraoperatively and are continued in the PACU.
- **Intraoperative** CO2-monitoring nasal cannulas **were incompatible with PACU** wall oxygen flowmeters.
- Cannulas were switched on arrival to PACUs, **doubling plastic supply use, increasing costs, and posing a safety risk** to patients if an appropriate nasal cannula were unavailable.

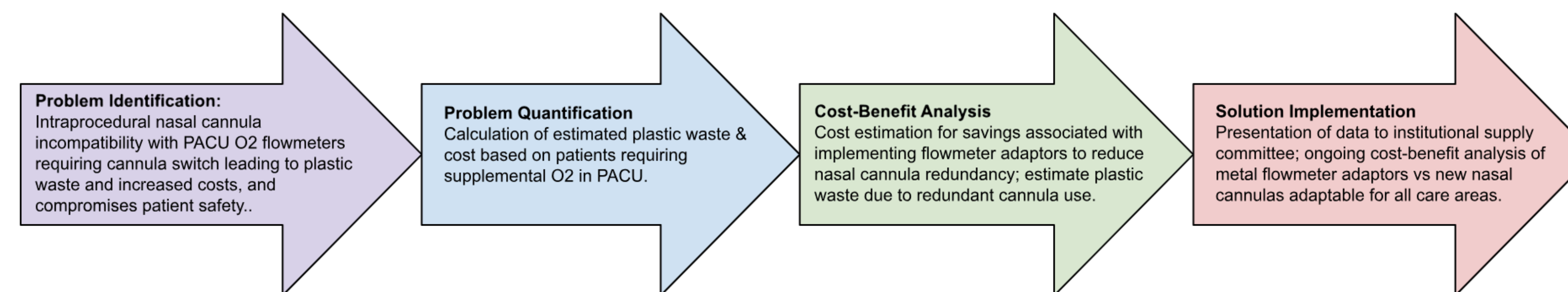


AIM STATEMENT

We aim to **quantify the environmental and financial waste** due to intraoperative-PACU nasal cannula incompatibility, find a **cost-effective solution** to mitigate this waste, and minimize interruptions in supplemental oxygen administration to **optimize patient safety**.
 We focused on the endoscopy suite as this is a high-use area.

PROBLEM QUANTIFICATION

- Using EMR aggregate data, we determined that ~12 endoscopy patients per day (~**3000 per year**) required nasal cannulas both intraoperatively and in the PACU. This was confirmed with a prospective convenience sample by PACU nursing.
- Assuming half had a nasal cannula switch and half used a disposable adapter, the **associated supply costs were \$6556**
- Switching the nasal cannula (~1 min) or obtaining the adapter (~2 min) incurred **\$6875 in nursing salary costs**
- The waste, including packaging, equaled **850 lbs of plastic**.



PROPOSED SOLUTION

- **Metal reusable flowmeter adapters** in PACUs prevent interruption in oxygen administration due to incompatible cannulas, thus improving patient safety. A one-time purchase of adapters **\$123** would equip the PACU.
- With one nasal cannula and a reusable adapter, **\$1638 in supply costs annually** would be saved.
- **Nursing costs** would be reduced by **\$6492** as it takes 5 seconds to connect the current nasal cannula to the adapter
- Time spent **cleaning** the adapters (30s) would increase salary costs by **\$2292**.
- **Annual plastic waste** would be reduced by **176 lbs**

IMPLEMENTED CHANGE

- Data was presented to the institutional supply committee.
- Supply found a **new EtCO2 monitoring nasal cannula** compatible with both intraoperative and PACU flowmeters. It is made of **less plastic** and is **softer** on patient nares.
- Without needing to purchase adapters or increase cleaning costs, the new cannula saves:
 - **Supply costs: \$1216**
 - **Nursing costs: \$6492**
 - **Plastic waste: 427 lbs**
 - More space in stock room
 - Less time stocking supplies
 - Decreased trash disposal costs

