

Improving Efficiency and Environmental Sustainability of Nasal Cannula Oxygen Delivery in the Recovery Room

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BACKGROUND

Patients were placed on end-tidal carbon dioxide (EtCO₂) monitoring nasal cannulas (NCs) compatible with nipple-type oxygen delivery systems (figure 1) in procedural rooms but incompatible with knob oxygen delivery systems in the PACU (figure 3).

Upon PACU arrival, staff either exchanged the NC for a knob-compatible NC (figure 2) or secured a green “Christmas tree” adapter (figure 4). Both methods contributed to waste, prolonged oxygen downtime, and “Christmas trees” pose an added infection risk because they are one time use.



Figure 1

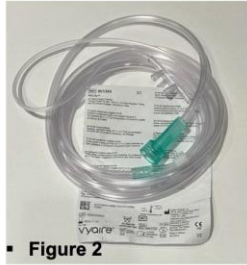


Figure 2



Figure 3



Figure 4

METHODS

- Through direct observation, we quantified endoscopy patient NC exchanges on PACU arrival.
- Analyzed cost per patient using two NCs, cost using one NC and one “Christmas tree,” nursing time lost, and oxygen downtime.
- Collaborated with anesthesia and supply chain leadership to introduce new EtCO₂ monitoring NCs (figure 5) compatible with oxygen delivery systems in both ORs and PACUs.



Figure 5

RESULTS

- Pre-implementation, we observed approximately 12 NC exchanges per day versus 0 exchanges for three months post-implementation.
- This solution is estimated to save \$8,091/year in material costs among endoscopy alone, reduce endoscopy’s plastic footprint by 595 pounds/year, reduce oxygen downtime patients experience on PACU arrival from 1 minute to under five seconds, and redirect 45 hours/year to direct nursing care.

DISCUSSION

- Leadership analyzed cost/unit of supplies; however, after nursing collaboration, we analyzed cost/patient because patients were using two products each, experiencing extended PACU stays, and requiring more nursing time.
- The new NC costs more per unit, but less per patient.

CONCLUSION

Through collaboration of PACU nursing, anesthesia clinicians, and supply chain leadership, we were able to quickly find a solution that not only improved patient safety, but also reduced the environmental and financial impact of providing high-quality care to our procedural patients. The EtCO₂ monitoring NCs have now been implemented in all our procedural areas.

REFERENCES

Suzuki, S. (2020). Oxygen administration for Postoperative Surgical Patients: A narrative review. *Journal of Intensive Care*, 8(1).
<https://doi.org/10.1186/s40560-020-00498-5>

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