

Less Waste, Lower Cost, Same Readiness: A Sustainability Model for Intraosseous Kit Distribution

Zora Vidovic DNP, AGACNP-c, Erin Hopkins AGACNP-C, Sajani Abraham DNP, AGACNP-c
Houston Methodist Hospital
APP Shared Governance Project with Quality Subcommittee



Background/Introduction

Intraosseous (IO) access is critical in emergencies, but device management was inefficient.

- 220 kits distributes across all the medical units with high waste due to kit expirations, leading to >\$100,000 in inventory value loss over 2 years.
- High environmental burden from single-use plastic kits.
- Opportunity identified: streamline IO kit use to reduce waste, cost, and environmental impact while maintaining readiness.
- Project led by nurse practitioners (NP) through Advance Practice Provider (APP) Shared Governance.
- Focused on clinical need, cost stewardship, and sustainability.

Guided by the Plan-Do-Check-Act (PDCA) model (IHI, 2023).

Purpose/Objectives/Hypothesis

- Reduce inventory waste & costs.
- Standardize needle size.
- Maintain emergency readiness.

Hypothesis :A standardized, sustainable model can reduce waste and maintain readiness

Method

Internal review of usage/inventory.
Interventions:

- Inventory ↓ 220 → 22 kits
- Standardized 45 mm yellow hub needle
- Centralized storage in medication rooms
- -Charge Registered Nurse (RN) accountability (retrieval/logs)
- Staff education July–August 2025; rollout September 2025

Results

LESS
WASTE

LOWER
COST

SAME
READINESS

Results/Implications

- Inventory ↓ 90%
- -Costs ↓ \$108,900 → \$6,000 (savings \$102,900)
- Prevented ~\$85,000 expired needle waste
- 100% availability during Code Blue/Clinical Emergency Response Team (CERT)
- 95% compliance with logs
- Staff reported clarity, efficiency, confidence
- 100 lbs plastic waste prevented
- 300 kg CO₂e avoided (≈ 750 driving miles)
- 40 kWh conserved (≈ fridge use 3 months)
- Sustainability, fiscal stewardship, and patient safety reinforced
- Framed by the Green ICU initiative for reliability and sustainability.
- Redesign streamlined access, reduced waste, and standardized practice.
- Demonstrated frontline-led improvement advancing safety, stewardship, and sustainability.

Future Actions

- Ongoing audits & education
- Expand model to other supplies
- - Share across Houston Methodist + Green ICU network

Acknowledgments

- -APP Shared Governance, Quality Subcommittee, frontline staff.

References

Hadaway (2012); Miller (2010); WHO (2018); IHI (2023); Thiel et al. (2021). . :

