



# Identification and Assessment of Wasted Materials in Enteric and Venous Access Procedures: Single Center, Prospective Study

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## Introduction

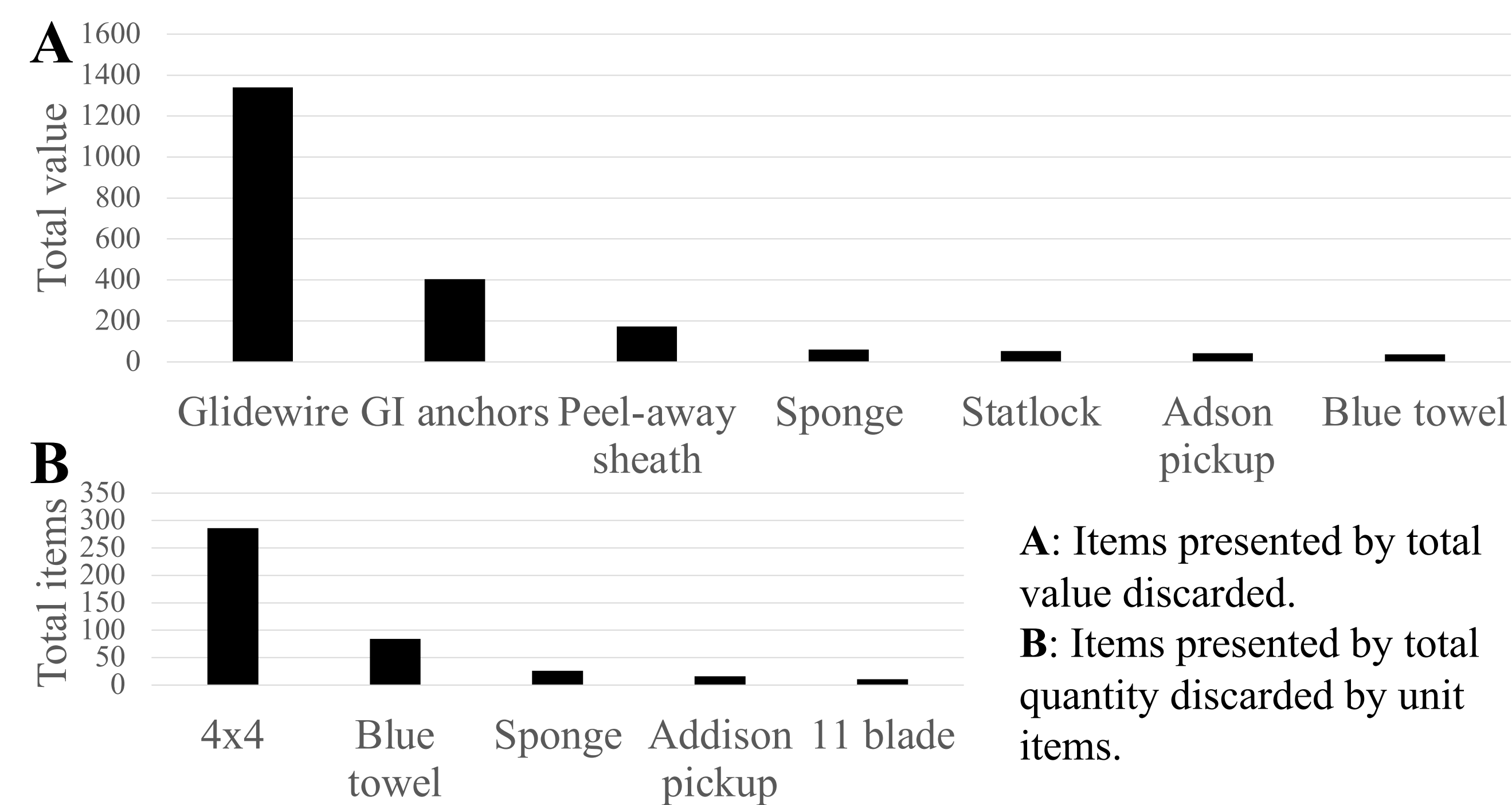
Interventional radiology uses pre-composed packs containing products pertinent to general procedures. Following completion of the procedure, all unused but opened products are discarded. Single-use materials are preferred for their sterility and cost characteristics. However, a potential surplus of items in the kits could inflate the cost of the procedures and total practice expenses. A study on neurosurgical procedures found an average unused supply cost of \$653 per case<sup>1</sup>. Another study estimated that up to 20.1% of the total cost allocated to surgical supplies was wasted as unused material<sup>2</sup>. The disparity is especially concerning in interventional radiology with often quick and numerous procedures.

Therefore, the purpose of this study is to evaluate unused items for commonly performed procedures. Outcomes of this study may assist IR practices in limiting supply cost inefficiencies through judicious selection of packaged components.

## Methods

The study received IRB approval and data collection was prospectively conducted over an 8-week period at the UAB Heart and Vascular Center. Unused but opened materials were collected from procedures during normal working hours of 8-5pm and included procedures such as tunneled venous access and enteric access. The unit cost of unused items was determined from the supply catalog and summed to determine the total cost of unused supply per each case.

## Results



Twenty-one cases were included in this study (13 vascular access and 8 enteric access). The most frequently discarded, unused product was gauze (n=286) followed by blue towels (n=84) with other discarded products including syringes, needles, wires. The most expensive unused and discarded product was guidewire. Cost of unused, discarded pack items totaled approximately \$924 over 13 vascular cases and \$1,330 over 8 enteric access cases.

## Discussion

Supply expenses are hospitals' second largest cost and increasing faster than labor expenses. Rising supply expenditures are due to increasing medical supply costs and supply chain issues<sup>3</sup>. Our study shows a significant burden of unused, discarded materials that contributes to increased medical supply expenditure. Total expenditure inefficiencies are likely underestimated since cost of disposal was not considered for the items.

Therefore, judicious selection of procedure pack components may reduce total practice expenditures.

## Conclusion

This study shows an average waste of \$71/case for routine tunneled line placements and \$166/case for enteric access procedures. Considering the IR division performs approximately 2000-3000 tunneled venous access procedures and ~1000 enteric access cases per year, the potential combined waste generated from tunneled venous access and enteric access approaches \$350K annually. In an era where cost savings is of great importance, optimizing waste mitigation should be a high priority for practices.

## Future Studies

Future studies will modify procedure pack components and evaluate supply waste for a cost savings analysis. Additionally, staff waste management practices will be evaluated for proper disposal of items.

## References

1. Zygourakis CC, Yoon S, Valencia V, et al. Operating room waste: Disposable supply utilization in neurosurgical procedures. *Journal of Neurosurgery*. 2017;126(2):620-625. doi:10.3171/2016.2.jns152442
2. Chasseigne V, Leguelinel-Blache G, Nguyen TL, et al. Assessing the costs of disposable and reusable supplies wasted during surgeries. *International Journal of Surgery*. 2018;53:18-23. doi:10.1016/j.ijsu.2018.02.004
3. Abdulsalam Y, Schneller E. Hospital supply expenses: An important ingredient in health services research. *Medical Care Research and Review*. 2017;76(2):240-252. doi:10.1177/1077558717719928

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