Midline Optimization: Quantifying the Five-Year Clinical, Operational, and Financial Impact of the VAT UGPIV Guidance Protocol (2021–2025)

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Background and Significance

- Midlines consume upper-arm vasculature needed for future access, increasing long-term access challenges.
- UGPIVs offer a safer, less invasive option for difficult IV access and can prevent unnecessary midline placement
- Midlines are more resource-intensive and should be reserved for patients who truly meet clinical criteria.
- Variability in ordering practices and implicit bias can lead to inappropriate midline use (e.g., ordering based on patient history rather than current assessment).
- A standardized, objective VAT protocol was implemented to reduce midline overuse, promote UGPIV-first decision-making, and preserve venous health over time.

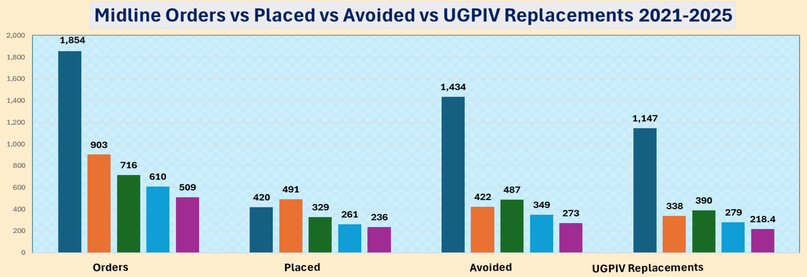
METHODS

- Design & Data Collection: Retrospective QI project from 2021–2025. Data on orders, avoidance, and cost savings were analyzed from electronic records.
- Intervention: Standardized VAT UGPIV Protocol
- The Vascular Access Team (VAT) reviews all Midline placement orders.
- Objective assessment criteria are reinforced and education provided to mitigate Implicit Bias.
- UGPIV placement recommended based on clinical criteria.

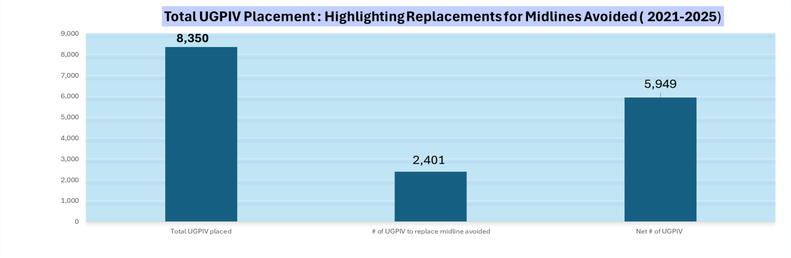
2021-2025

Total midlines Orders 4,829

Total midlines Avoided 2,965



Year	Orders	Placed	Avoided	% Avoided	UGPIV Replaced (80%)
2021	1854	420	1434	77.35%	1147
2022	913	491	422	46.22%	338
2023	943	456	487	51.64%	390
2024	610	261	349	57.21%	279
2025	509	236	273	53.63%	218
Total	***4829***	***1864***	***2965***	***61.40%***	***2372***



Total cost savings

$840,708.59

RESULTS

- 2,965 midlines avoided, representing 61.40% avoidance rate.
- Among avoided midlines:
  80% (2,372) required UGPIV placement.
  20% had functioning PIVs.
- Protocol-driven shift toward UGPIV reduced unnecessary midline use.
- Total five-year net supply cost savings: $840,708.59
- Preserved upper-arm vasculature and reduced higher-cost device utilization.

DISCUSSION

- Protocol effectively reduced midline overuse and standardized device selection
- Objective assessment preserved vasculature and improved practice consistency.
- Resulted in $840,708.59 in supply cost savings from 2021–2025.
- Supports broader adoption of UGPIV-first practices aligned with Infusion Therapy Standards of Practice (Nickel et al., 2024)
- Future work should monitor long-term utilization trends, evaluate labor-time savings, and explore downstream outcomes such as potential CLABSI reduction.

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References