

EFFECTING A LASTING INCREASE IN REGIONAL ANESTHESIA USE FOR VASCULAR ACCESS SURGERIES AT VIRGINIA MASON: A FOLLOW UP

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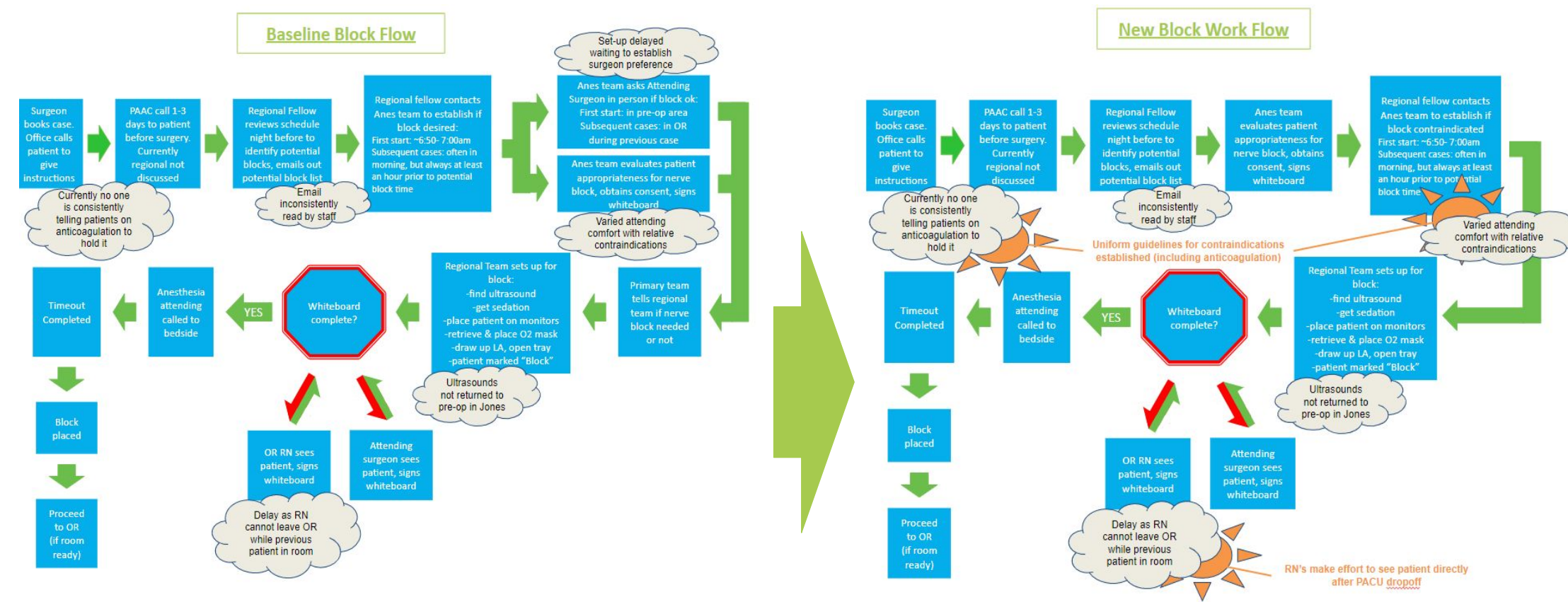
INTRODUCTION

- Benefits of regional anesthesia (RA) for arteriovenous fistula (AVF) creation and arteriovenous graft (AVG) placement include:
 - Increased three-month and one-year primary and functional patency of fistulas^{1,2}
 - Increased likelihood of successful radio-cephalic AVF creations along with the brachiocephalic AVF and AVG placement^{3,4}
 - Transitioning from planned AVG to an AVF after regional block is placed⁴
 - Avoiding general anesthesia (GA) in at risk-population
- However, rates of RA have remained low
 - RA as primary anesthetic in AVF creation surgeries, 2023 meta-analysis: 2.1% (South), **6.1%** (West), 6.4% (Midwest)⁵
 - At Virginia Mason Medical Center (Sept 2021 – Sept 2022):
 - 19.23%** AVF and AVG surgeries received primary RA (surgical block)
 - Another 11.5% received RA and GA, total **30.8%** receiving RA
- Goal: **Increase primary RA rates to >50% and increase overall block rates to >66% for each month following initiation**

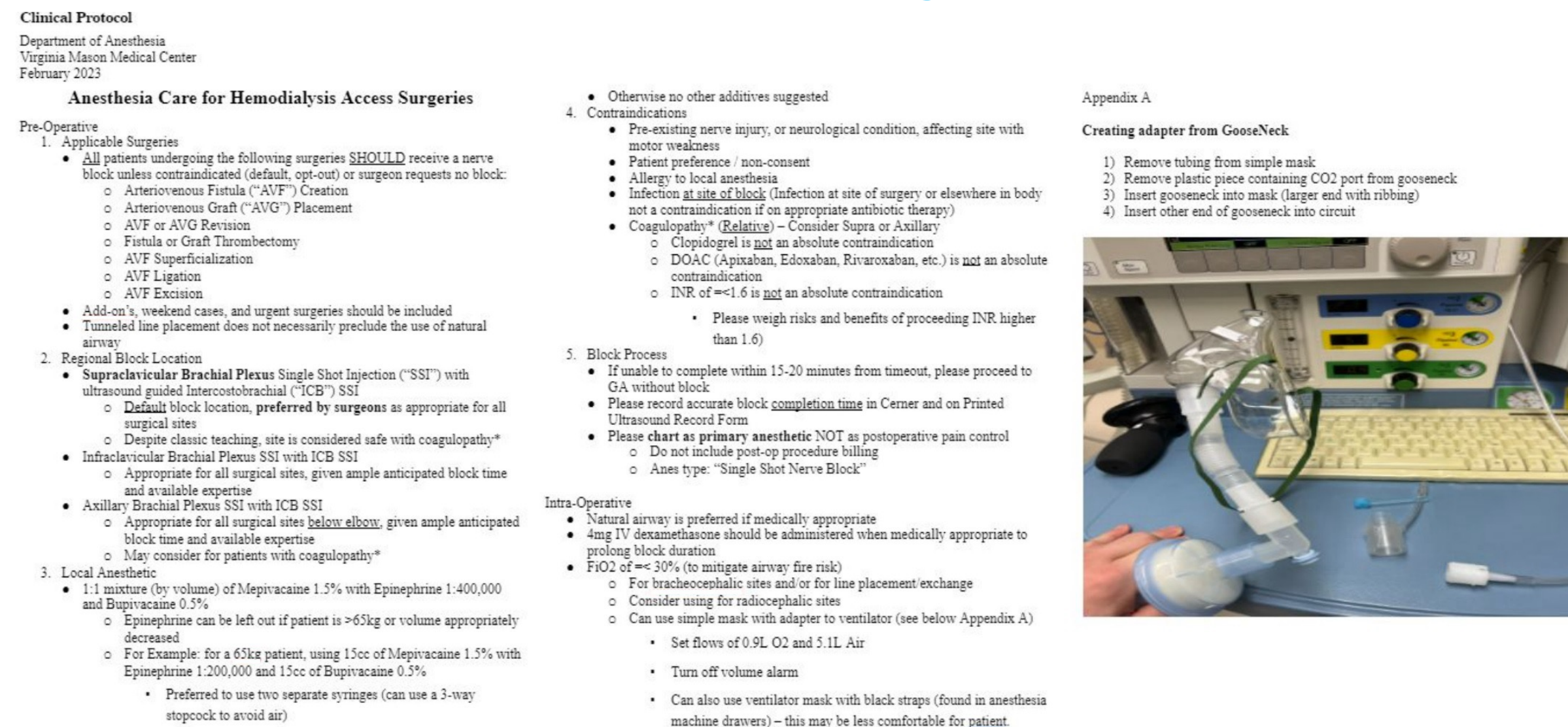
METHODS

- Root cause analysis survey and Value Stream Map: Attendings, residents, CRNAs, and vascular surgeons (Fig 1)
 - Anticoagulation guidelines established
 - Scheduled AVF/AVG cases identified for block
 - Standardized protocol for certain procedures (increase plan awareness)
 - Guidelines for contraindications established
 - System placed for OR RN to see patient during prior case or at PACU drop-off
- Clinical protocol was developed and implemented (Fig 2)
- Protocol live on February 7th 2023
- Performance
 - Surgical Block Rate: percent of target surgeries receiving RA and native airway
 - Any Block Rate: percent of target surgeries receiving RA and GA
 - Tracked until end of January 2024

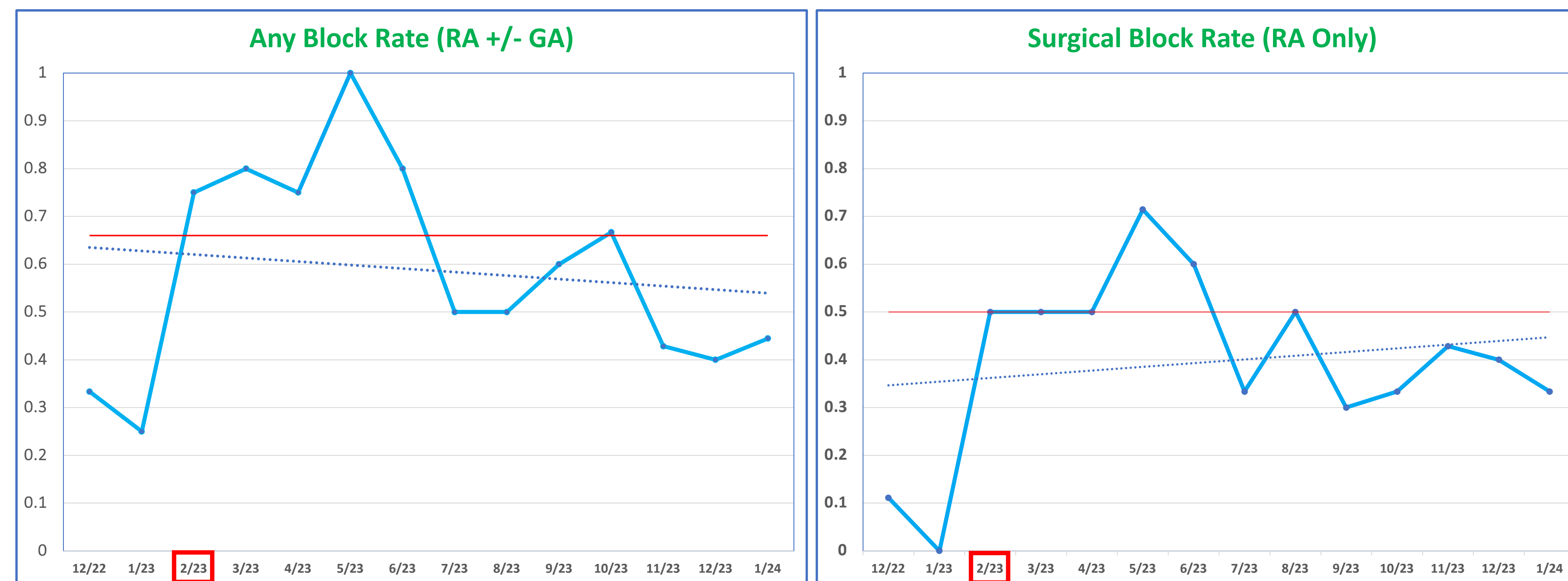
Value Stream Maps (Fig 1)



Clinical Protocol (Fig 2)



Results (Fig 3)



Results (Fig 3)

- Any Block Rate: **63%** vs 31% prior, (45/71)
- Surgical Block Rate: **44%** vs 19% prior, (31/71)
- Overall trend positive since initiation, doubled our rates
- Study **DID NOT achieve intended goal**

Discussion

- What improved ?** (Qualitative date and pre-op note review)
 - Better understanding of relative contraindications like anticoagulation
 - Regional team identifying the relevant cases night prior and emailing the OR anesthesia team
 - Establishing a protocol so anesthesia team, surgical team, preop nursing, OR nursing, and PACU aware
- What's still a barrier ?**
 - Anesthesia attending comfort or preference to regional anesthesia
 - Comfort with supraclavicular single shots or fear of surgical block failure was noted
 - 54.5%** of the cases *WITH* a block were done by non-regional attendings, while **81.6%** of the cases *WITH NO* block were done by non-regional attendings
 - Patient factors: body habitus preventing a safe regional anesthetic, arriving late, and patient refusal
 - Surgical consent and OR nursing delays can lead to a delay in block start time, increase time crunch, and could influence the block rate
- What's next?**
 - Increasing resources for procedural guidance (i.e. “back up” regional attending)
 - Increasing awareness of protocol given slow decrease since initial peak (i.e during department grand rounds and intradisciplinary announcements)

REFERENCES

- Aitken E, et al. Effect of regional versus local anaesthesia on outcome after arteriovenous fistula creation: a randomised controlled trial. Lancet. 2016 Sep 10;388(10049):1067-1074.
- Aitken E, et al. Long-Term Functional Patency and Cost-Effectiveness of Arteriovenous Fistula Creation under Regional Anesthesia: a Randomized Controlled Trial. J Am Soc Nephrol. 2020 Aug;31(8):1871-1882.
- Shemesh D, et al. General, regional or local anesthesia for successful radial cephalic arteriovenous fistula. J Vasc Access. 2017 Mar 6;24-28.
- Jorgensen MS, et al. The Role of Regional versus General Anesthesia on Arteriovenous Fistula and Graft Outcomes: A Single-Institution Experience and Literature Review. Ann Vasc Surg. 2020 Jan;62:287-294.
- Beletsky A, Currie M, Shen J, Brooks H, Desilva M, Winston N, Gabriel RA. Differences in Regional Anesthesia Utilization by Hospital Region in the United States. Cureus. 2023 Oct 10;15(10):e46795. doi: 10.7759/cureus.46795. PMID: 37954698; PMCID: PMC10634528.