

Regional anesthesia practice patterns

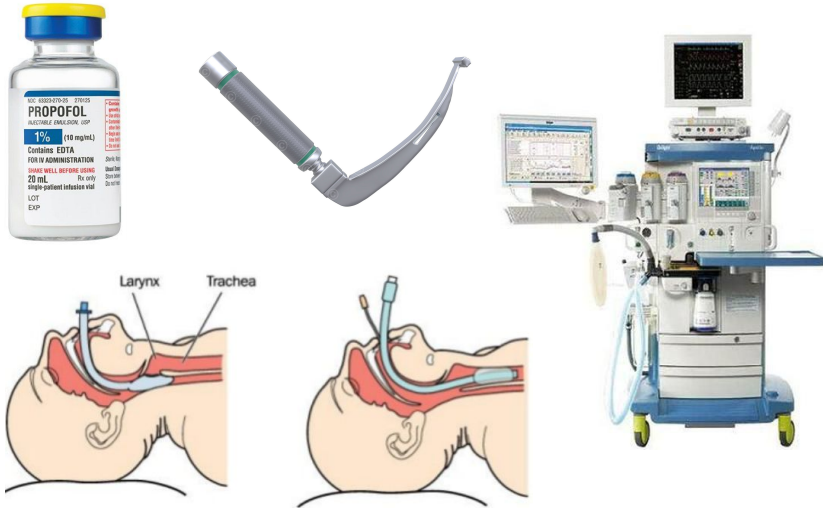
Samir Thaker, MD, MSPH

Dec 5, 2019 - BMIN 503

What is “regional” anesthesia?

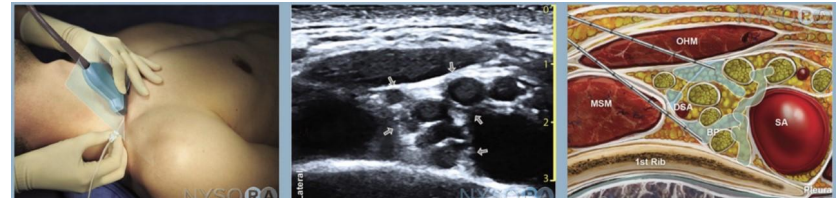
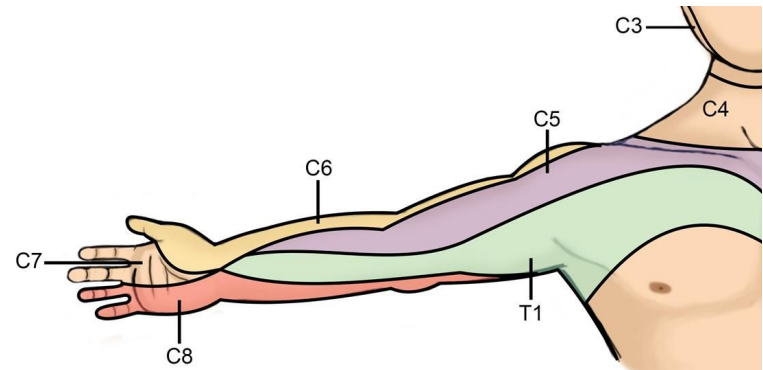
General Anesthesia:

Combination of drugs / techniques to render a patient unconscious



Regional Anesthesia:

Block nerve transmission to specific “regions” of the body



Regional anesthesia offers several potential benefits

- Improved post-operative pain control
- Reduced opiate exposure
- Reduced risk of post-operative cognitive dysfunction
- Improved surgical conditions
- Safer choice for certain high-risk populations
 - Airway abnormalities
 - Severe cardiovascular disease
 - High risk for post-op cognitive dysfunction
 - Pregnancy

Logistics of providing regional at Penn are complicated

- Over a dozen facilities where surgical procedures are performed where regional anesthesia may be beneficial
- “Block time” for surgeons is assigned based on a complex mix of specialty, volume, seniority, etc. -- availability of appropriate anesthesia support is assumed
- Anesthesia staff with regional expertise are limited, difficult to consistently match staffing with patient volume on a given day

Project overview

- Understand overall volume of regional anesthesia provided across PennMed
- Assess variation in volume by surgical service, facility, day, and time
- Evaluate characteristics of regional blocks being performed across the system

Data on regional anesthetics pulled from Epic

Oct 2018 - Oct 2019

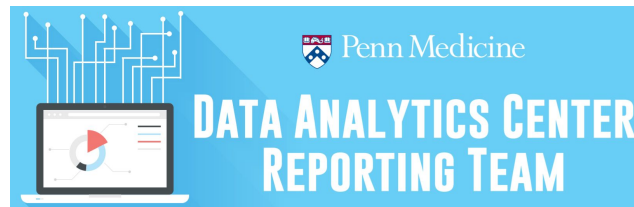
143,666

Surgical cases



9,642 (7%)

Peripheral nerve blocks



Variables pulled:

- Patient age, gender
- Surgical procedure
- Location (facility)
- Date and time for anesthetic events
- Anesthesia and surgical staff involved
- Procedure note (structured text with details on nerve block & meds used)

Regular expression matching used to extract data

Lopez Marquez, Hector U, MD

Resident

Anesthesiology

Anesthesia Procedure Notes

Signed

Date of Service: 11/25/2019 1

Procedure Orders

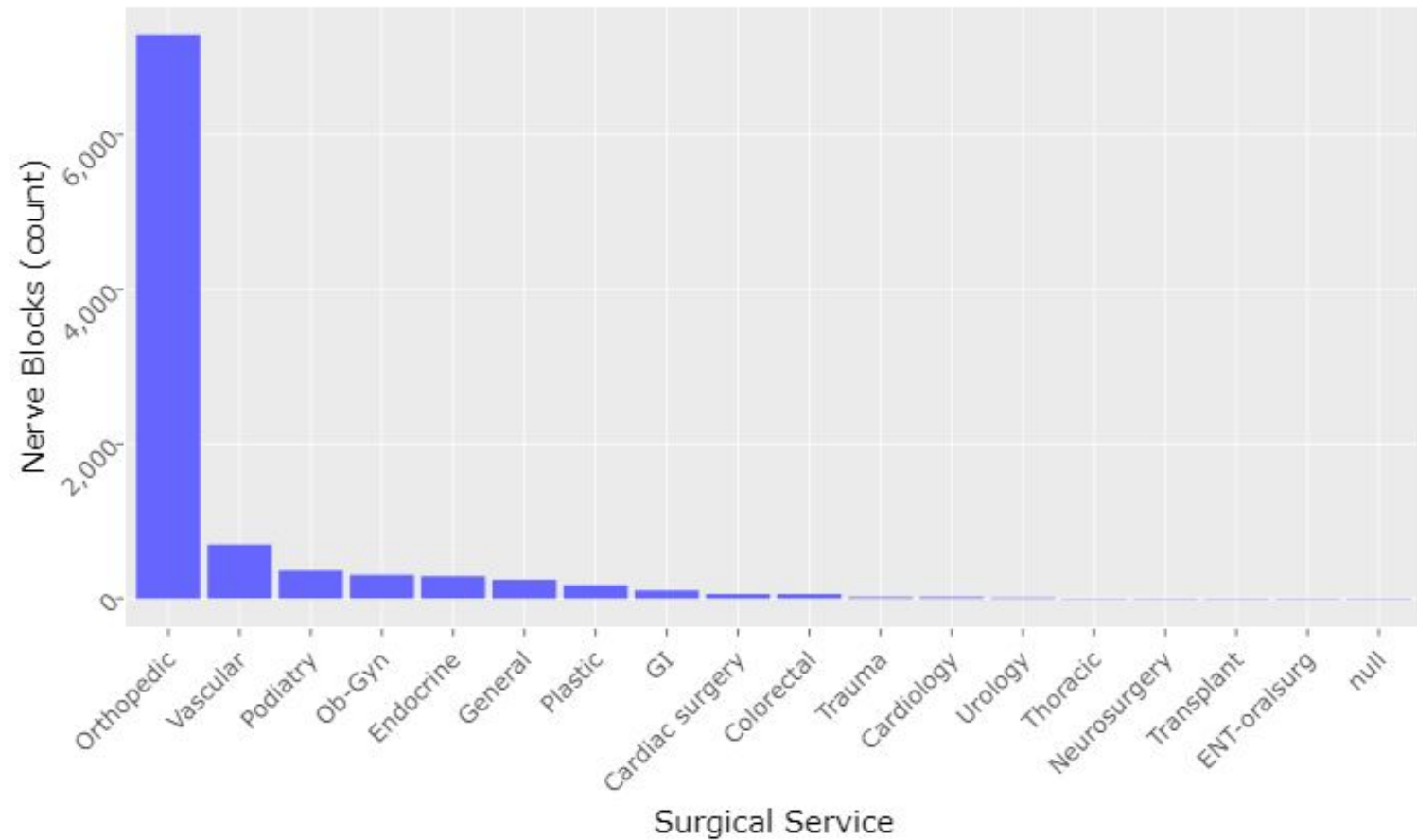
Peripheral nerve block [420488967] ordered by Lopez Marquez, Hector U, MD at 11/25/19 1055

Signed

Peripheral Nerve Block

Performed by Lopez Marquez, Hector U, MD. Attending Supervisor Abraham, Daniel, MD. Pre location PreOp. Indication(s) regional (primary) anesthetic and surgeon request. Complete documentation monitoring employed and patient NPO status documented elsewhere in the medical record. For approach. Preprocedure checks: patient identified using two unique identifiers, consents verified, equipment and resuscitation drugs present/available. Patient condition since arrival in anesthesia mask, chlorhexidine/alcohol prep and drape. Local skin infiltration 1% lidocaine infiltrated. For injection, spread of local seen, no intraneural injection and no IV injection. Needle: 21 G x 10 aspiration at each site: mepivacaine 1.5% 30 mL, with no steroid, no adrenergic. Events: no c

Regional Volume by Surgical Service



Details of nerve blocks contained in structured text

Lopez Marquez, Hector U, MD Resident Anesthesiology	Anesthesia Procedure Notes Signed	Date of Service: 11/25/2019 10:55 AM
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Procedure Orders

[Peripheral nerve block \[420488967\]](#) ordered by Lopez Marquez, Hector U, MD at 11/25/19 1055

Signed

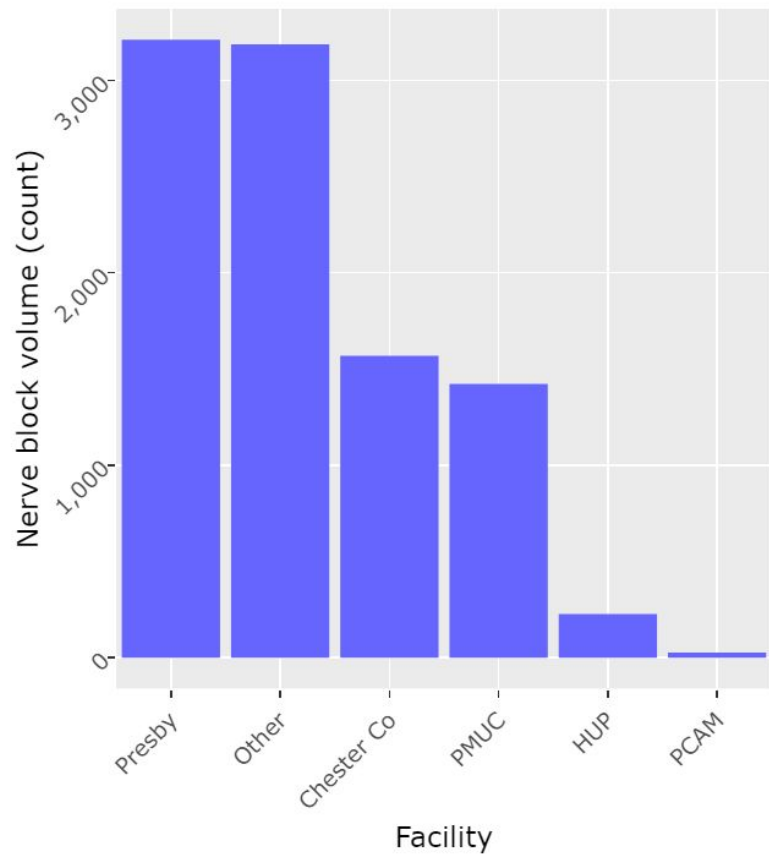
Peripheral Nerve Block

Performed by Lopez Marquez, Hector U, MD. Attending Supervisor Abraham, Daniel, MD. Procedure date/time documented in anesthesia record intra-op events. Patient location PreOp. Indication(s): regional (primary) anesthetic and surgeon request. Complete documentation regarding concurrent vital signs, medications administered, monitoring employed and patient NPO status documented elsewhere in the medical record. Primary block: Brachial plexus block. Brachial plexus approach: supraclavicular approach. Preprocedure checks: patient identified using two unique identifiers, consents verified, procedure and site verified including laterality if indicated and airway equipment and resuscitation drugs present/available. Patient condition since arrival in anesthetizing location unchanged. Patient position: sitting. Hand wash, sterile gloves, mask, chlorhexidine/alcohol prep and drape. Local skin infiltration: 1% lidocaine infiltrated. Technique: Right plexus identified by anatomic landmarks and ultrasound in plane, excellent view, perineural injection, spread of local seen, no intraneural injection and no IV injection. Needle: 21 G x 100 mm short bevel. Catheter: none. Sterile dressing applied. Anesthetic medications injected (after negative aspiration at each site): mepivacaine 1.5% 30 mL, with no steroid, no adrenergic. Events: no complications

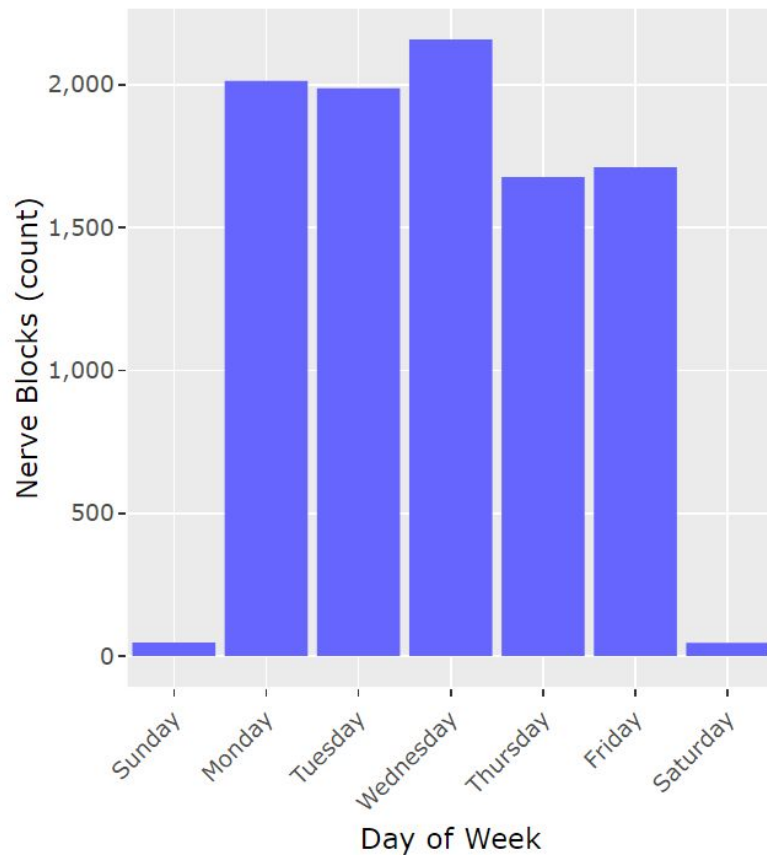
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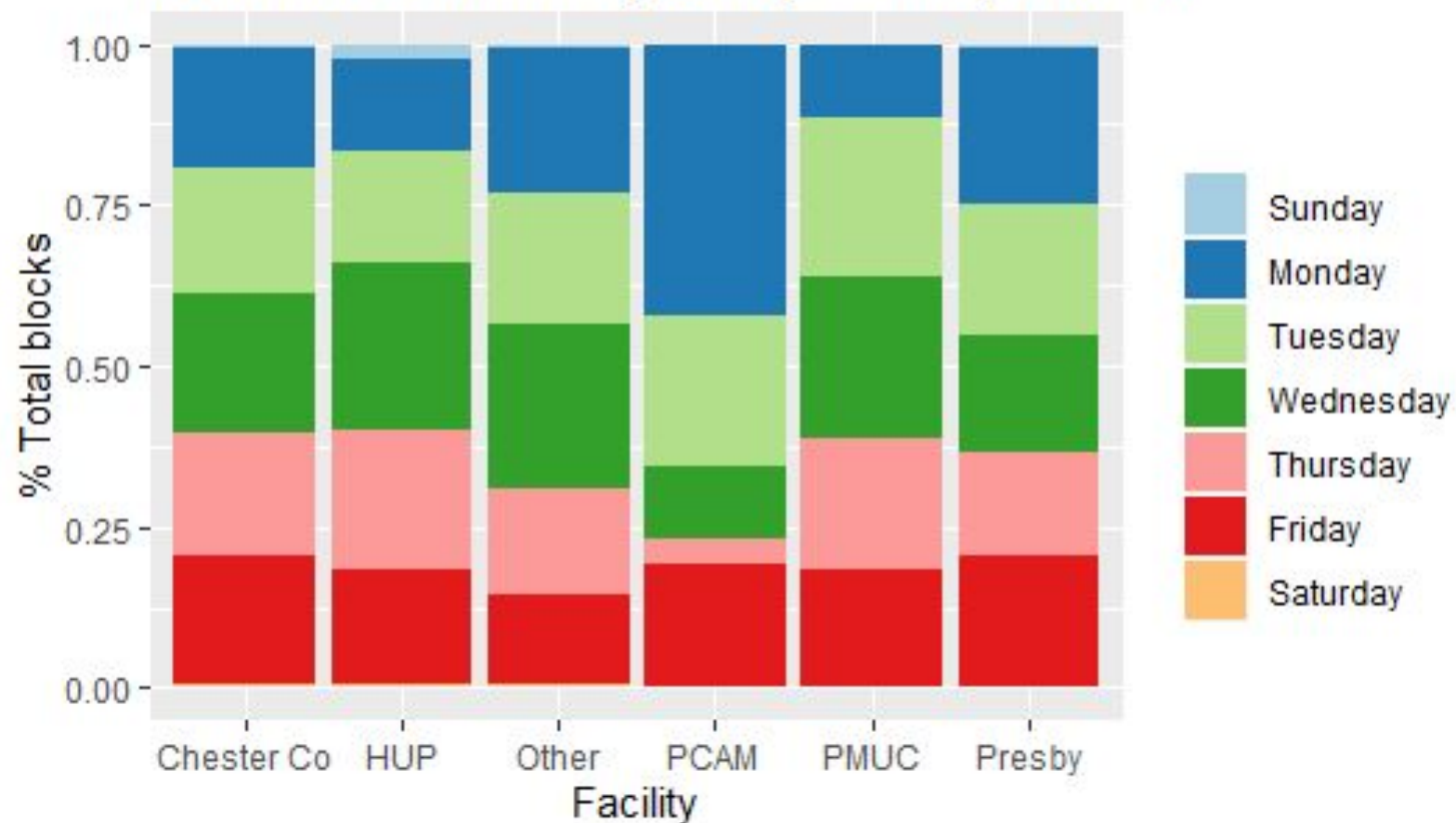
Nerve block volume by facility



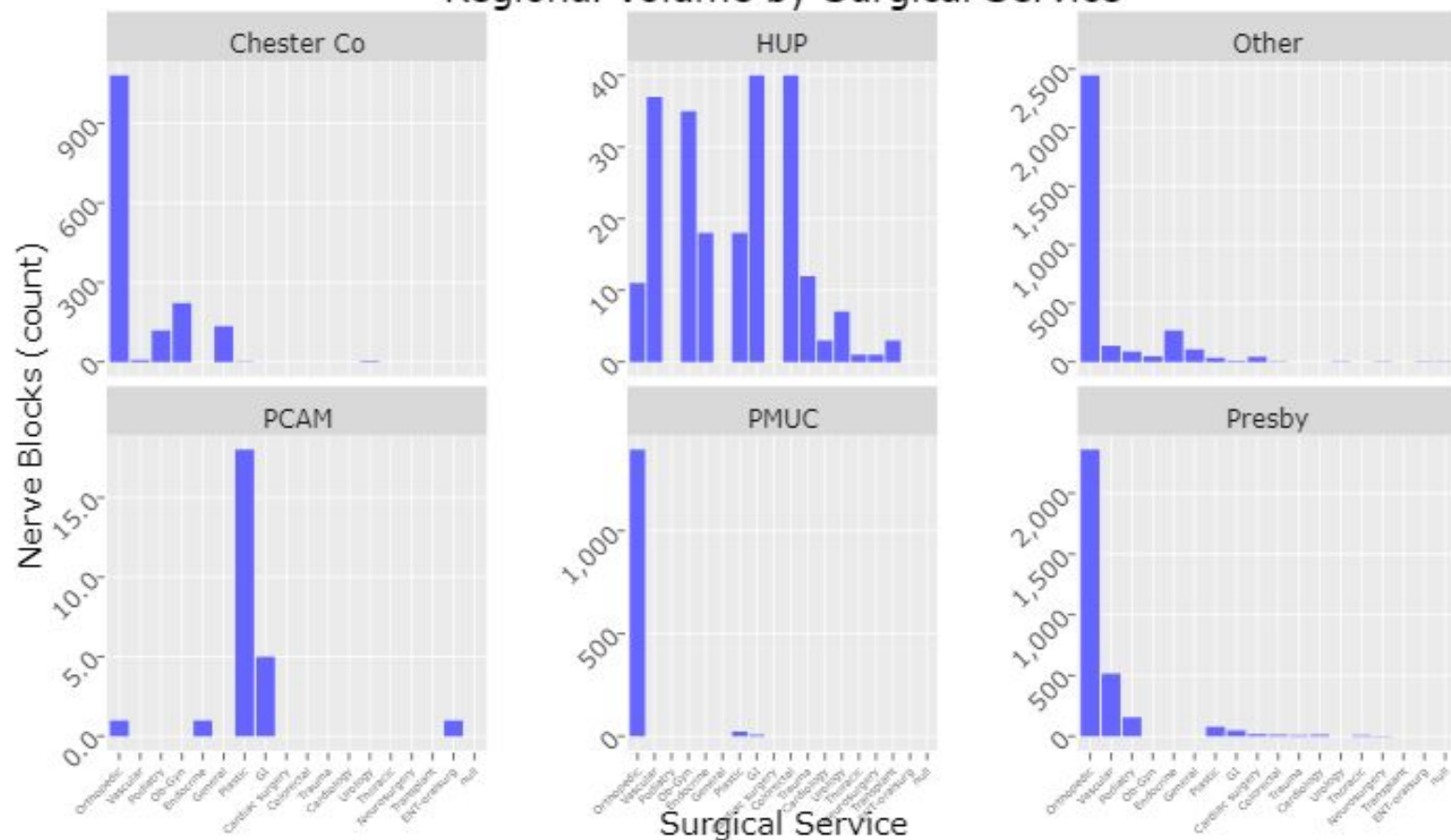
Nerve Block Volume by Day of Week



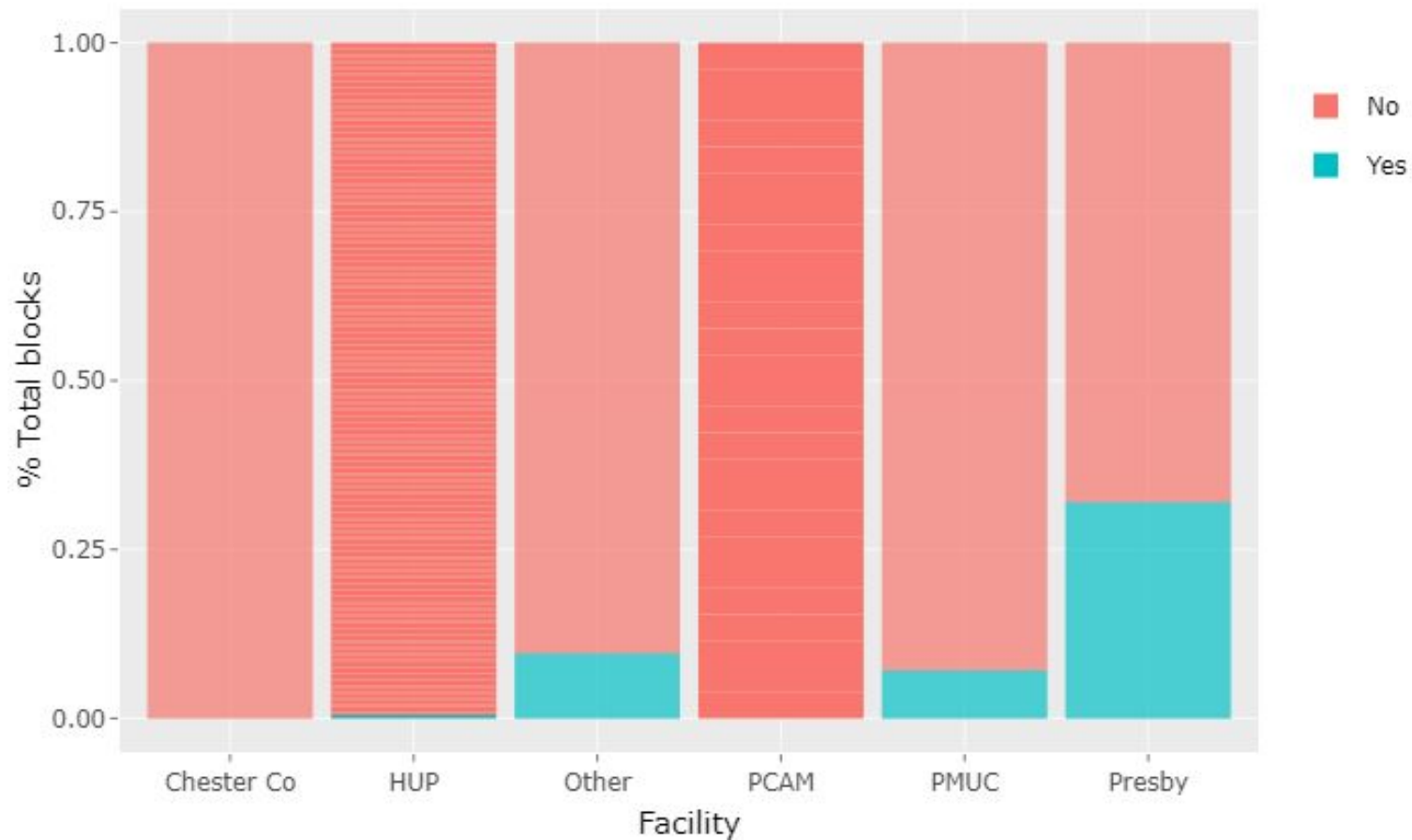
Nerve block volume by facility and day of week



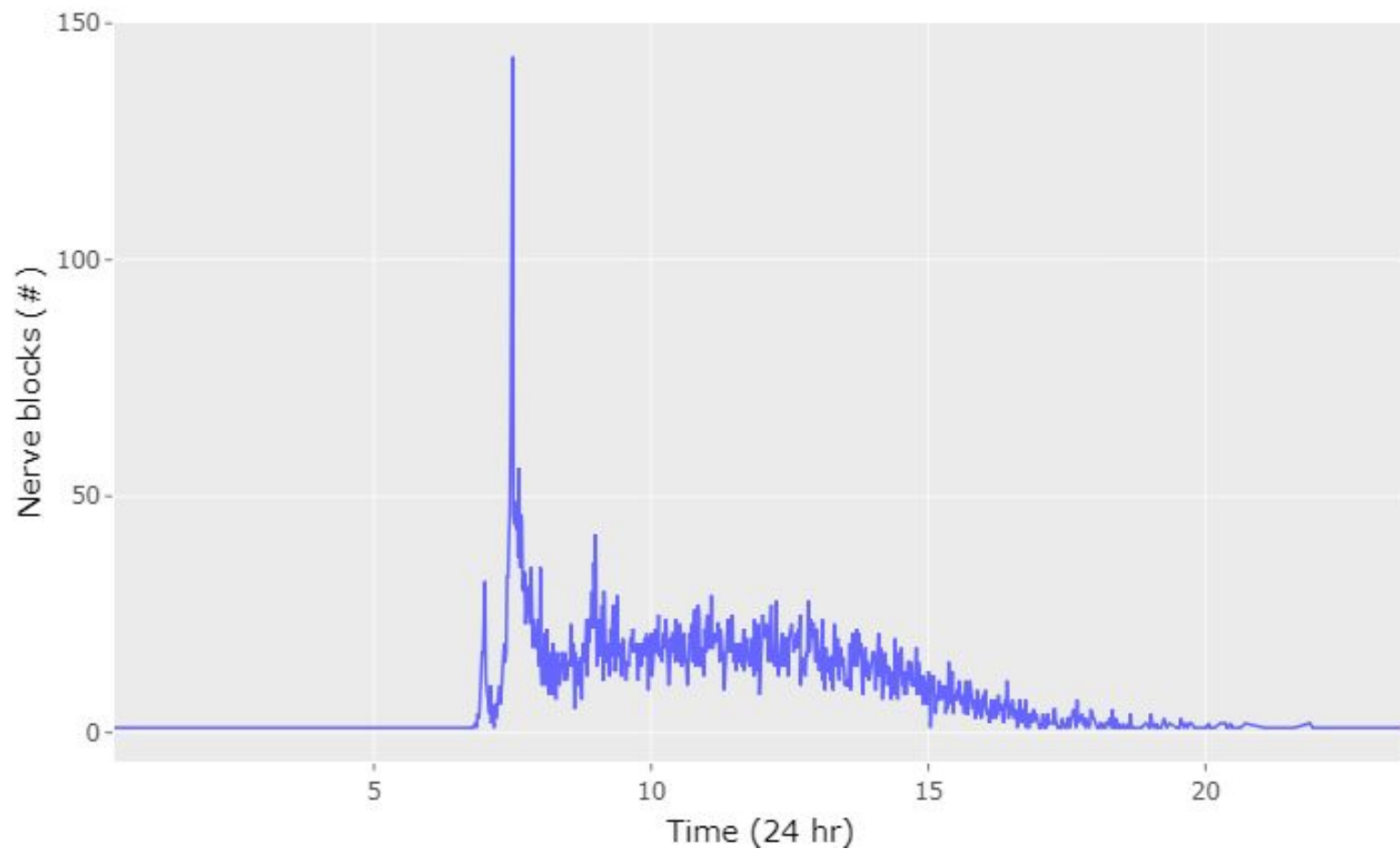
Regional Volume by Surgical Service



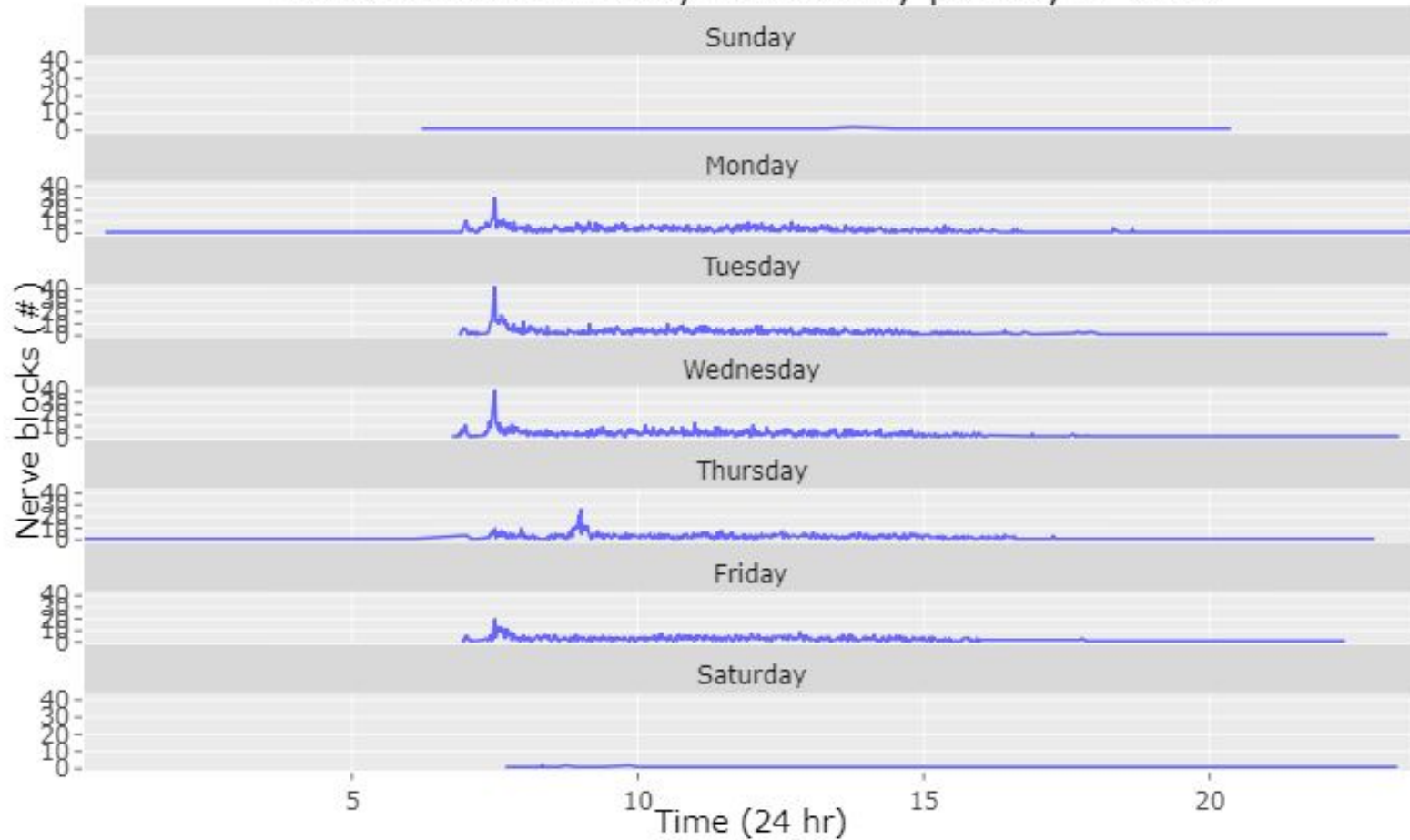
Catheter left in place after block



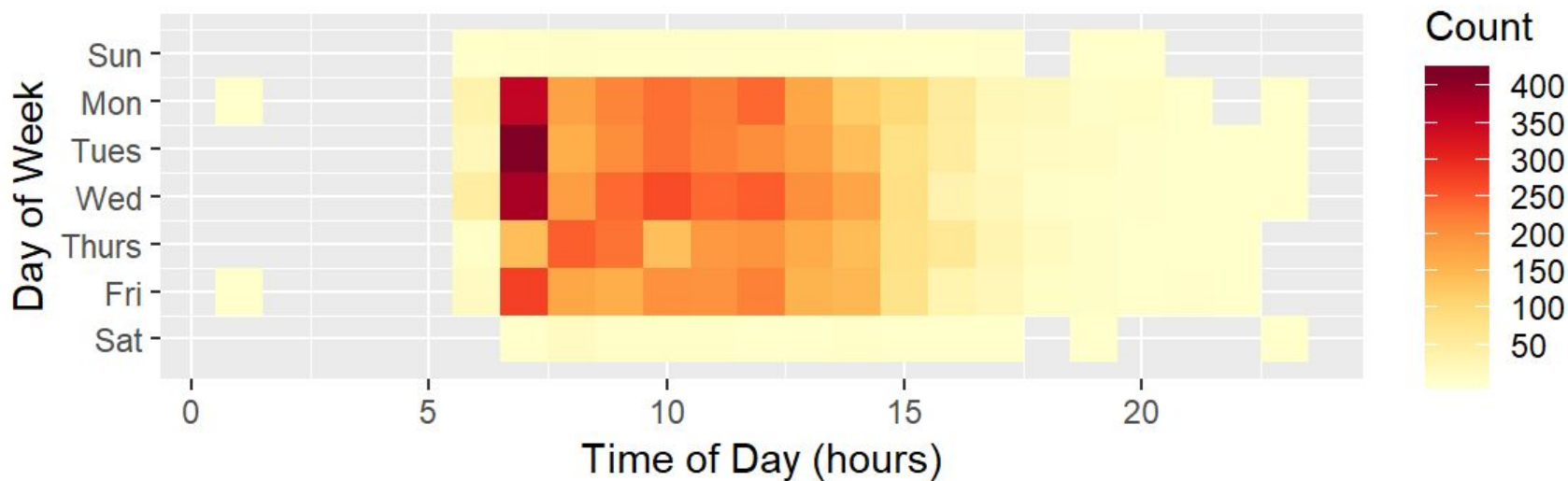
Nerve block volume by time of day



Nerve block volume by time of day per day of week



Regional volume by time and day of week



Conclusions & Thanks

- Exploratory analyses identified some interesting patterns in use of regional anesthesia by facility, day of week, and surgical service
- Further investigating practice variations may identify opportunities to better match staff with surgical needs & improve the quality/efficiency of regional anesthesia services across the PennMed system
- Thanks to project advisors:
 - Nabil Elkassabany, MD
 - Mark Pizzini, MD
 - Gurmukh Sahota, MD, PhD

