



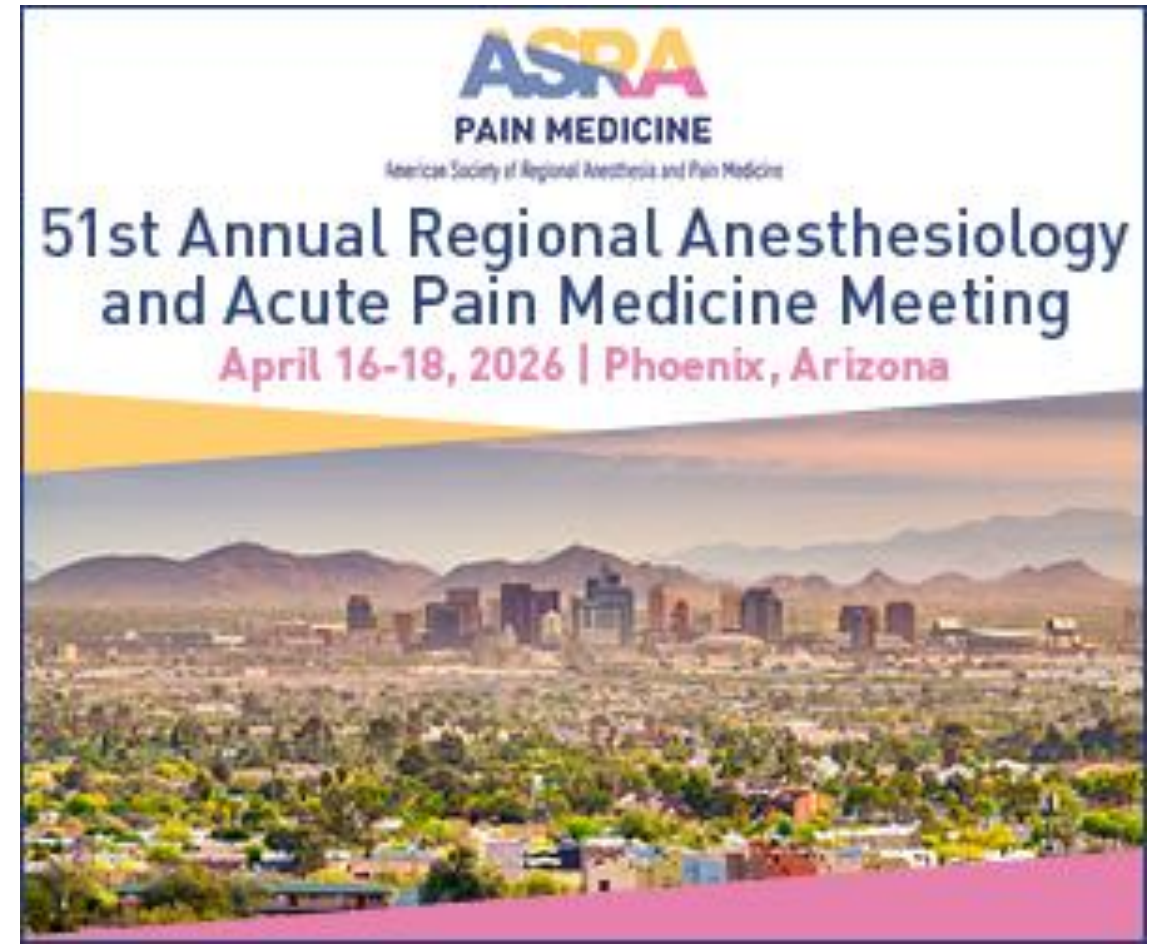
Investigating the Role of Neuraxial Anesthesia in Pediatric Surgical Patients: Analysis of Trends from a High-Volume Orthopedic

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Background

- Neuraxial anesthesia (NA) as the primary anesthetic is less common than general anesthesia (GA) in pediatric populations
- However, evidence supports the safety and efficacy of NA: hemodynamically stable, ↓ airway manipulation, ↓ opioids, ↓ PONV, ↓ financial costs¹⁻⁴
- At HSS: spinals are routinely offered to patients aged <18 and demonstrate low GA conversion rates despite its fast-paced ambulatory environment

Aims

Describe primary anesthetic modalities, medication doses, and trends by age groups for pediatric orthopedic surgeries

Population & Methods

- All lower-extremity cases in patients <18 years old from 2016-2024 → 9,565 surgeries
- 1,526 patients aged <12 and 7,612 aged 12-18
- Baseline demographics and block characteristics were analyzed with descriptive statistics
- Log-linear Poisson regression described NA trends

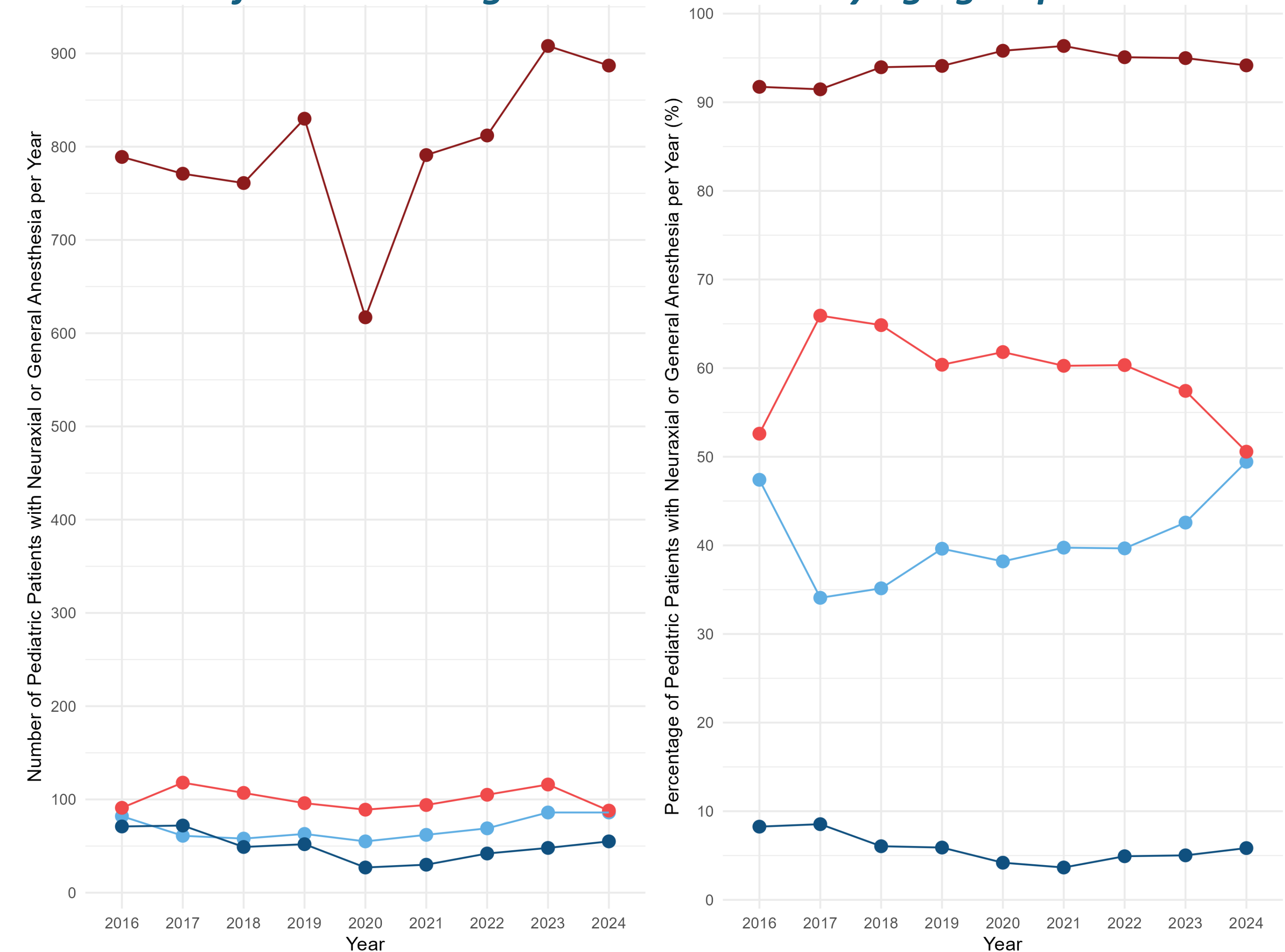
References and Funding Source QR code:



Medication type and dose (mg) for each type of neuraxial anesthesia

Neuraxial Type	Medication	N	Mean Dose (mg)	Standard Deviation	Range (min-max)	Median Dose (mg)	IQR
Combined Spinal Epidural (N=659)	Bupivacaine	480	13.54	3.3	2.5-25	15	11-15
	Mepivacaine	175	57.10	19.09	30-225	60	45-60
	Chloroprocaine	4	62.50	5	60-70	60	60-62.5
Epidural (N=196)	Bupivacaine	101	27.24	27.71	2.5-187.5	22.5	12.5-25
	Mepivacaine	58	242.72	87.61	7.5-450	255	225-300
	Lidocaine	37	357.84	105.91	100-600	400	300-400
Spinal (N=7944)	Bupivacaine	1637	9.51	4.19	1-37.5	10	5-12.5
	Mepivacaine	5089	53.95	84.92	7.5-6075	52.5	45-60
	Chloroprocaine	1218	53.47	11.29	24-120	56	45-60
Missing (N=5)	Bupivacaine	3	34.17	17.74	15-50	37.5	26.25-43.75
	Mepivacaine	2	48.75	5.3	45-52.5	48.75	46.88-50.63

Trends of neuraxial or general anesthesia by age groups



Conclusions

- High spinal utilization (84.84% to 93.54%)
- Mepivacaine = most common spinal medication
- This temporal snapshot revealed consistent NA rates, high spinal utilization, and declining CSE and epidural use consistent with national trends
- Higher NA rates in patients ≥12 and lower rates in younger children may reflect procedure suitability and distinct physiologies of young children that limit NA use

Trends of neuraxial anesthesia by block type

