Peripheral Nerve Block Intensity for Total Joint Arthroplasty Among Florida Medicare Beneficiaries, 2019–2023

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INTRODUCTION

Peripheral nerve blocks (PNBs) reduce postoperative pain and opioid consumption following total joint arthroplasty (TJA). Despite guideline endorsement, geographic variation persists. Florida has one of the largest Medicare populations in the U.S.; we evaluated temporal trends in PNB utilization for TJA among Florida Medicare beneficiaries.

MATERIALS & METHODS

Retrospective ecological analysis of CMS Medicare Physician and Other Practitioners Public Use Files (2019–2023). TJA and PNB services were identified by CPT/HCPCS codes. PNB intensity = PNB services per 100 TJA services; ratios may exceed 100 when multiple PNBs are billed per encounter. Neuraxial anesthesia is not captured. Descriptive analyses used R 4.5.2. Publicly available, deidentified aggregate data met institutional criteria for IRB exemption.

Table 1.

PNB/Arthroplasty Service-Intensity Ratios (per 100 arthroplasty services), Florida vs. National, 2019–2023

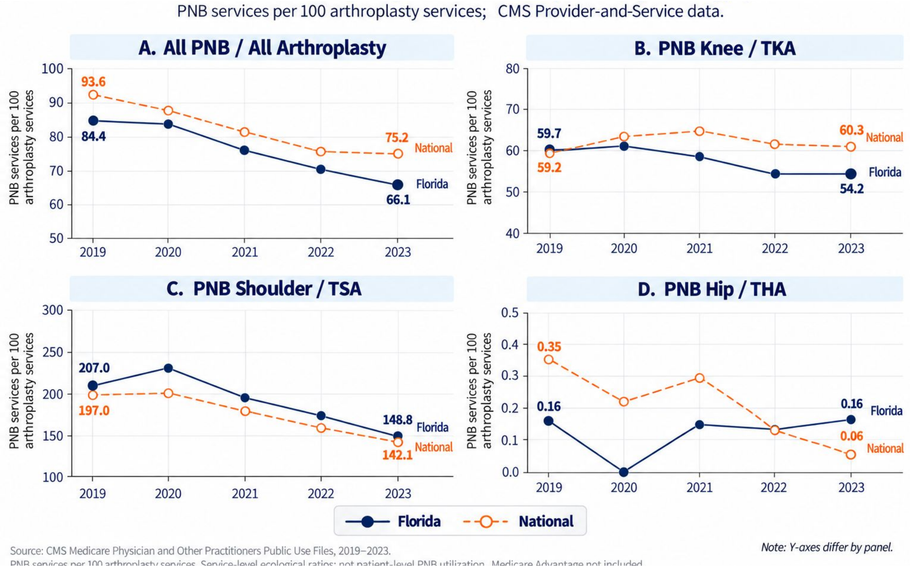
Ratio (per 100)	FL 2019	FL 2023	FL Δ	Nat. 2019	Nat. 2023	Nat. Δ
All PNB / All TJA	**84.4**	**66.1**	**−21.6%**	**93.6**	**75.2**	**−19.7%**
PNB knee / TKA	59.7	54.2	−9.2%	59.2	60.3	+2.0%
PNB shoulder / TSA	207.0	148.8	−28.1%	197.0	142.1	−27.9%
PNB hip / THA	0.16	0.16	−3.9%	0.35	0.06	−82.5%

CMS Medicare Physician and Other Practitioners Public Use Files, 2019–2023. Medicare Advantage claims not included. Ratios may exceed 100 when multiple PNBs are billed per encounter.

MORE ARTHROPLASTY. LESS PNB INTENSITY

Despite an **18.8% rise** in Florida TJA volume, PNB service intensity **fell 21.6%** (84.4 → 66.1 per 100) and remained below the **national benchmark of 75.2**, signaling a regional adoption gap.

FIGURE 1 · FLORIDA VS. NATIONAL PNB/ARTHROPLASTY SERVICE-INTENSITY RATIOS BY JOINT TYPE, 2019–2023



RESULTS

- Aggregate PNB/TJA intensity fell sharply in Florida: 84.4 → 66.1 per 100 TJA services (−21.6%), tracking the national decline (93.6 → 75.2, −19.7%) but remaining consistently below it.
- Knee intensity diverged from the national trend: Florida knee PNB/TKA fell 59.7 → 54.2 (−9.2%), while the national rate was flat-to-rising (**59.2 → 60.3, +2.0%**),the clearest signal of a regional adoption gap.
- Shoulder intensity declined steeply in parallel: Florida shoulder PNB/TSA fell 207.0 → 148.8 (−28.1%), mirroring the national drop (197.0 → 142.1, −27.9%).
- Hip-specific intensity remained negligible throughout: Florida hip PNB/THA held near zero (0.16 → 0.16 per 100), far below the already-minimal national rate.
- Florida ended below the national benchmark: by 2023, aggregate Florida PNB/TJA intensity was 9.1 points below the national aggregate (66.1 vs. 75.2 per 100).

Table 2.

PNB and TJA Service Volumes, Florida vs. National, 2019–2023

Measure	Nat. 2019	Nat. 2023	Nat. Δ	FL 2019	FL 2023	FL Δ
THA	240,537	274,801	+14.2%	19,133	22,481	+17.5%
TKA	473,671	526,893	+11.2%	32,073	37,921	+18.2%
TSA	74,540	93,167	+25.0%	6,274	7,855	+25.2%
All TJA	**789,744**	**895,983**	**+13.5%**	**57,480**	**68,295**	**+18.8%**
PNB hip	849	170	−80.0%	31	35	+12.9%
PNB knee	280,232	317,878	+13.4%	19,154	20,556	+7.3%
PNB shoulder	146,823	132,345	−9.9%	12,986	11,687	−10.0%
Nonspecific PNB	311,217	222,954	−28.4%	16,341	12,894	−21.1%
All PNB	**739,121**	**673,347**	**−8.9%**	**48,512**	**45,172**	**−6.9%**

CMS Medicare Physician and Other Practitioners Public Use Files, 2019–2023. Medicare Advantage claims not included.

DISCUSSION / CONCLUSION

Despite rising TJA volume, overall PNB service intensity declined in Florida from 2019–2023, driven by knee and shoulder decreases; hip-specific intensity remained negligible and Florida stayed below national benchmarks. Knee-specific rates diverged from stable national rates, suggesting an adoption gap. Limitations include ecological design, exclusion of Medicare Advantage beneficiaries, and inability to capture neuraxial or periarticular infiltration. Targeted quality improvement and barrier investigation are warranted.

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