Spinal admissions by anatomic region and pathology: a national analysis of 683,904 hospitalizations

Ryan E. Radwanski, MD[1,5] · Mark Rowan, DO[2] · Dalton House, MD[3] · Susan C. Pannullo, MD[4,5]

[1]Family Medicine Residency Program, Hunterdon Medical Center, Flemington, NJ · [2]Family Medicine Residency Program, Self Regional Healthcare, Greenwood, SC · [3]University of Kentucky Rural Morehead Family Medicine Residency, Morehead, KY · [4]Columbia University, New York, NY; Cornell University, Ithaca, NY · [5]Brain & Spine Group, Branchburg, NJ

ASRA Pain Medicine · 25th Annual Pain Medicine Meeting · November 5-7, 2026 | Tampa, Florida · #ASRAFALL26

Two-thirds of thoracic spine admissions are vertebral fractures. The thoracic red flag holds at national scale.

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1 BACKGROUND

- Teaching holds that **thoracic** spinal pain more often signals serious pathology, but this rests largely on assertion and small series.
- We characterized the pathology of adult spinal admissions by region at **national scale**.

2 METHODS

- **2022 National Inpatient Sample** (HCUP, AHRQ), a 20% stratified sample of US discharges.
- Adults ≥18 with a principal spinal diagnosis; code list **enumerated from the data**, adjudicated, frozen (of 170,912 candidates: 33,890 non-vertebral and 241 unadjudicated codes excluded).
- Survey-weighted proportions, Taylor-linearized 95% CIs (weights, strata, clusters); load validated against AHRQ published statistics.
- Phase 1 of a two-phase analysis; phase 2 examines treatment.

This analysis used de-identified administrative data and was approved by the Hunterdon Medical Center Institutional Review Board.

3 RESULTS

Thoracic admissions that are vertebral fracture

66.8%

65.6–68.1 · vs 20.3% cervical, 16.3% lumbosacral

Lumbosacral admissions that are degenerative

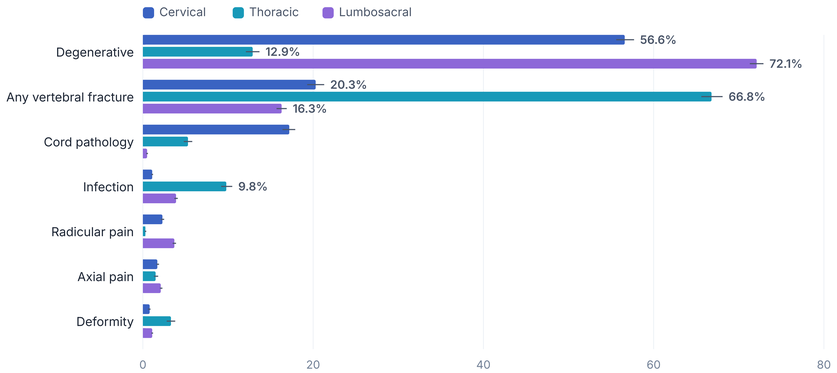
72.1%

71.3–72.9 · vs 56.6% cervical, 12.9% thoracic

Spinal infection among thoracic admissions

9.8%

9.2–10.5 · vs 3.9% lumbosacral, 1.1% cervical



Pathology composition by anatomic region, NIS 2022. 136,781 sampled admissions, 3,585 hospitals, representing 683,904 nationally. Region-unspecified admissions excluded.

All NIS 2022 discharges
n = 6,578,372

→ − age blank 1,562 − under 18 1,005,490

Adults 18 or older
n = 5,571,320

→ − no spinal principal dx 5,400,408

Principal spinal diagnosis (519 candidate codes)
n = 170,912

→ − non-vertebral 33,890 − unadjudicated 241

Final analytic cohort
n = 136,781

4 CONCLUSIONS

- Thoracic admissions are **categorically different**: two-thirds are vertebral fracture; cervical and lumbar are predominantly degenerative.
- The red-flag teaching for thoracic pain is **supported at national scale**.
- Weekend admission tracked urgency: 1.2% for deformity up to 27.6% for thoracic fracture; cervical-fracture mortality 3.4%.
- **Limits:** malignancy codes carry no anatomic level; coded diagnoses, not imaging; descriptive and associational.

Companion poster

- Phase 2, treatment by level: abstract **2491372**

5 REFERENCES

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Data source: HCUP National Inpatient Sample (NIS), 2022, Agency for Healthcare Research and Quality. The authors acknowledge the HCUP Data Partners (hcup-us.ahrq.gov/db/hcupdatapartners.jsp).

Disclosures & funding: The authors report no conflicts of interest related to this work.

Presenting author: **Ryan E. Radwanski, MD** · rradwanski@hhsnj.org