Management and Economic Burden of Adult Inpatient Epistaxis

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Introduction

- Epistaxis is among the most common otolaryngologic emergencies, with estimates of lifetime incidence approaching 60%.[1]
- Hospitalized patients may be managed with packing, surgical cautery, arterial ligation, or transarterial embolization, and the choice between these approaches has implications for costs, length of stay, and additional risk to patients.[2–4]
- Prior national analyses of inpatient epistaxis management in the United States have relied on data from the ICD-9-coding era, predating the transition to ICD-10 coding.[5–7]
- The COVID-19 pandemic imposed an abrupt change to emergency and elective hospitalization, and the extent of this effect on epistaxis admissions is unknown.
- **Objective:** To characterize national trends in adult inpatient epistaxis admissions, case-mix, procedural management, and resource use.

Methods

- This is a retrospective cross-sectional analysis of adult inpatient epistaxis discharges in the Healthcare Cost and Utilization Project National Inpatient Sample (HCUP NIS) from 2016 to 2022.
- Adults aged ≥18 years with a principal ICD-10-CM diagnosis of epistaxis were identified and assigned to 6 mutually exclusive hemostatic management groups using ICD-10-PCS codes.
- Survey-weighted logistic and linear regression modeled trends with discharge year as a continuous predictor.
- Segmented quasi-Poisson regression of quarterly counts assessed discontinuity during the COVID-19 pandemic.
- Trends for nasal/endoscopic control were reported from 2019 onward, because the ICD-10-PCS 093K code family was introduced in the fourth quarter of 2018.
- Monetary values were adjusted to 2022 US dollars using the Consumer Price Index for All Urban Consumers (CPI-U).[8]

Results

- The cohort consisted of 12,283 unweighted discharges (61,415 weighted).
- Annual weighted admissions fell from 11,080 to 6,900 (−752/year; 95% CI, −1030 to −473; P=.001), including a −15.4% level shift at the second quarter of 2020 (95% CI, −25.5% to −3.9%; P=.01) beyond a pre-existing 8.0% annual decline **(Figure 1A)**.
- Packing decreased from 47.7% to 38.7% (OR 0.944/year; 95% CI, 0.926-0.962; P<.001) while embolization increased from 8.8% to 10.8% (OR 1.065/year; 95% CI, 1.031-1.099; P<.001) **(Figure 1C)**.
- Mean Elixhauser count rose (+0.079/year; P<.001) **(Figure 2A)**, as did antithrombotic use (34.7%-36.9%; P=.003).
- Ischemic stroke occurred in 2.3% of embolization versus 0.2% of packing discharges.
- Mean charges per discharge rose from $42,900 to $54,800 (P<.001) **(Figure 3C)**, whereas aggregate national charges fell from $468 to $373 million (P=.017) **(Figure 3D)**.

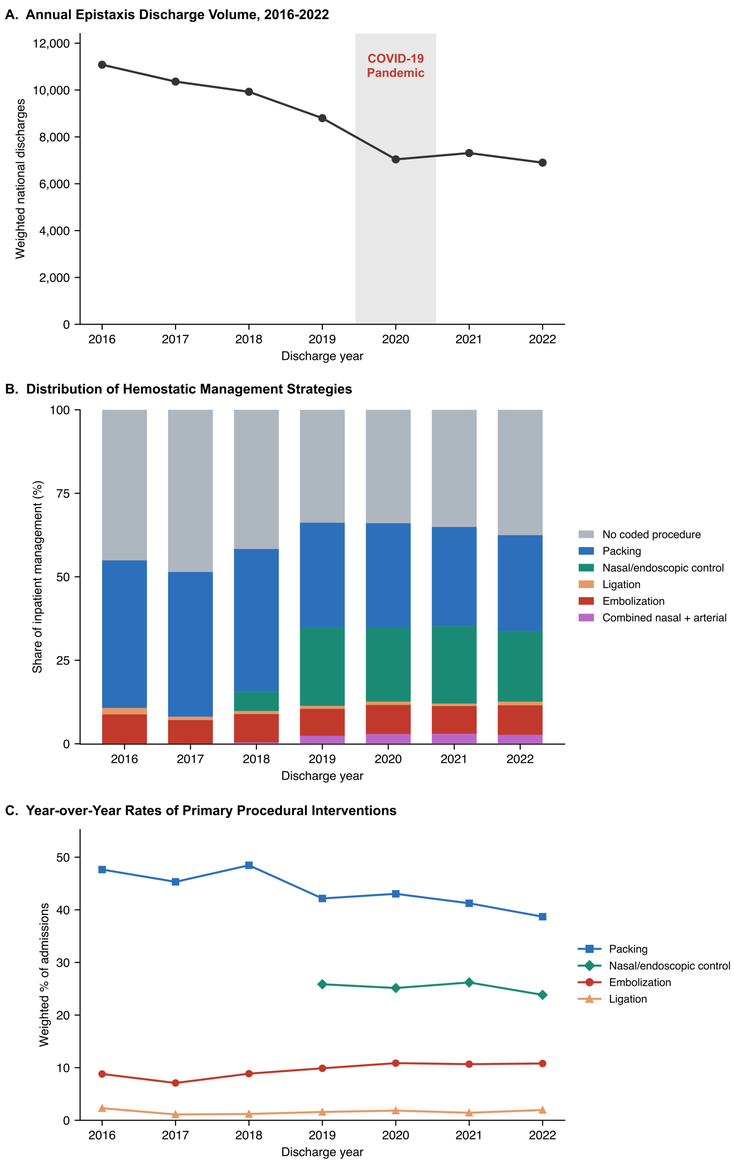


Figure 1. Annual inpatient epistaxis volume and management trends. Survey-weighted annual discharge counts (A) and percentages by mutually exclusive management groups (B) and procedural strategies (C). Nasal/endoscopic control trends are restricted to 2019–2022.

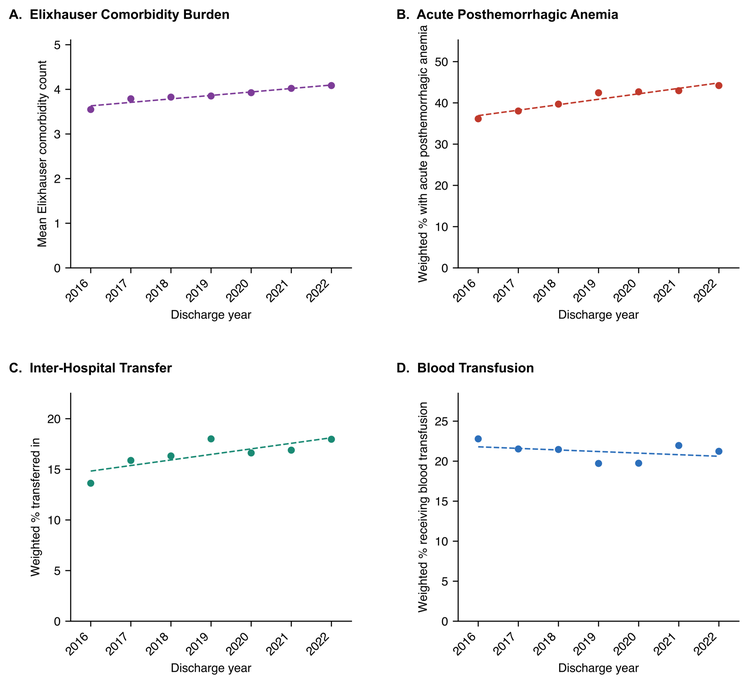


Figure 2. Case-mix complexity among hospitalized adult patients with epistaxis. Annual survey-weighted trends show mean Elixhauser comorbidity count (A), acute posthemorrhagic anemia (B), transfer from another acute care facility (C), and receipt of blood transfusion (D).

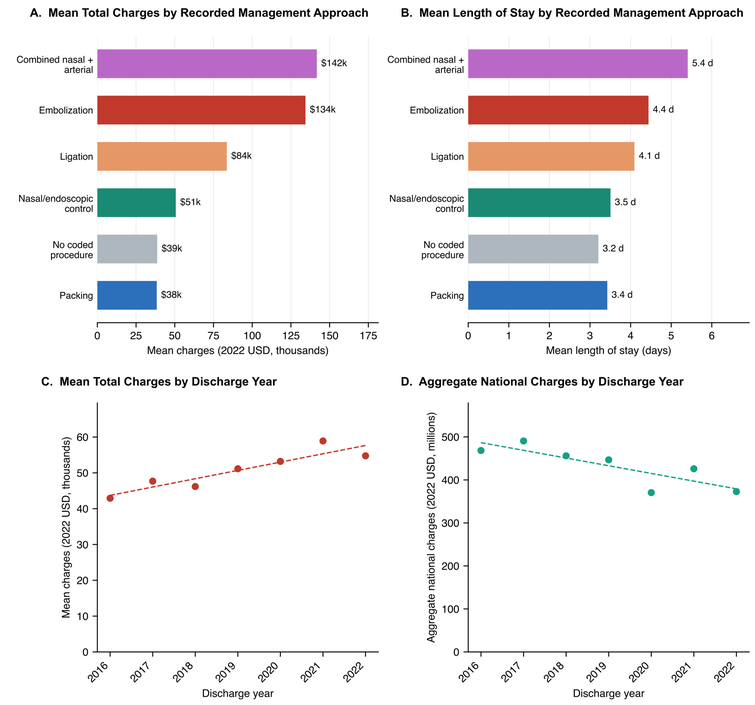


Figure 3. Resource use and national charge burden. Survey-weighted mean total hospital charges per discharge (A) and length of stay (B) by management. Annual mean charges with linear trend (C) and aggregate national charges (D).

Discussion

- Because the NIS captures only patients who are admitted, a decline of this magnitude potentially reflects a higher threshold for admission and greater use of emergency department and outpatient management.
- Embolization was associated with a higher rate of ischemic and thromboembolic events than packing (2.7% versus 0.5%). This association should be considered carefully, as patients selected for embolization differ in multiple ways from those managed with packing. We therefore report stroke rates descriptively and cannot conclude risk differences of stroke based on management.
- Why ligation has remained uncommon is less clear, given that it is a guideline-concordant, lower-cost option.[9]

Conclusions

- Between 2016 and 2022, inpatient epistaxis in the United States became less frequent but more medically complex.
- The admitted population carried an increasing burden of comorbidity and antithrombotic exposure, alongside a gradual increase in endovascular embolization.
- Even as each admission grew more costly, aggregate national spending on inpatient epistaxis declined, as the falling number of admissions outweighed the rising cost per stay.
- These trends support careful patient selection when escalating to embolization, and they invite consideration of lower-cost options such as sphenopalatine artery ligation.

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