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Comparability of Closed and Open Claims Data for Healthcare Resource Utilization Assessment in Acute Ischemic Stroke

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Background

- Closed claims data are generated from insurance providers and capture a comprehensive picture of a patient's care across different settings over a defined period. The completeness of closed claims allows for longitudinal patient analysis
- While closed claims tend to be more accurate and detailed, it can take months to adjudicate claims. Additionally, data are limited to specific timeframes and payers
- Open claims data are generated through various systems, such as clearinghouses, physician billing systems, and pharmacies. Open claims provide a snapshot of patient interactions across settings and payers, offering near real-time data
- Although open claims have broader coverage and higher patient counts, they can be affected by duplication and missing information, and do not have longitudinal patient data over a defined period
- Claims activity in open claims data may be used as a proxy for defined enrollment periods available from closed claims data

Objective

- Compare patients with persistent upper extremity (UE) deficit after acute ischemic stroke (AIS) in closed and open claims
- Assess whether open claims data can be used to characterize healthcare resource utilization

Methods

- Patients with an inpatient admission for AIS were identified using ICD-10-CM codes I63.x from July 2017 to December 2023 in closed claims and July 2016 to March 2024 in open claims
- In closed claims, patients were required to have continuous enrollment with medical and pharmacy benefits for ≥ 6 months prior to admission and ≥ 12 months post-discharge (or death)
- In open claims, enrollment was proxied by evidence of a medical or pharmacy claim within 6-months prior to admission and ≥ 12-months post-discharge (or death)
- Patients were excluded if they had an inpatient AIS claim or any claim for UE deficit (ICD-10-CM codes I69.33x or I69.35x) within 6 months prior to the index admission. Patients were required to have a claim for UE deficit > 180 days after discharge
- Baseline covariates were assessed at admission and for the 6-months prior. Outcomes were assessed in the 12-months post discharge. Proportions were compared between closed and open claims populations

Results

Table 1. Patient Attrition in Closed and Open Claims

Criteria	N	% Retained	Criteria	N	% Retained
Inpatient admission for AIS	129,829	--	Inpatient admission for AIS	1,868,845	--
Continuous enrollment ≥ 6-months prior to admission	95,900	73.9%	**Claims activity** within 6-months prior to admission	1,616,787	86.5%
Continuous enrollment ≥ 12-months post-admission (or death)	72,335	75.4%	**Claims activity** ≥ 12 months post-admission (or death)	1,432,654	88.6%
No inpatient AIS admission or UE claim in baseline	69,200	95.7%	No inpatient AIS admission or UE claim in baseline	1,362,625	95.1%
With persistent UE deficit (>180 days after discharge)	11,324	16.4%	With persistent UE deficit (> 180 days after discharge)	250,233	18.4%

Table 2. Demographics and AIS Admission Characteristics in Closed and Open Claims

Mean Age	66.0	69.2
Male Sex	47.4%	48.2%
Payer at Index		
Commercial	15.9%	21.0%
Medicare*	50.0%	68.5%
Medicaid	34.1%	10.5%
Mean Length of Stay	7.8	8.8
ICU Care	42.4%	28.2%
Thrombectomy	6.8%	5.3%
Discharge to Home	44.2%	43.0%

*Medicare Advantage in Closed Claims. Medicare Advantage and Original Medicare in Open Claims.

Figure 1. Baseline Comorbidities in Closed and Open Claims

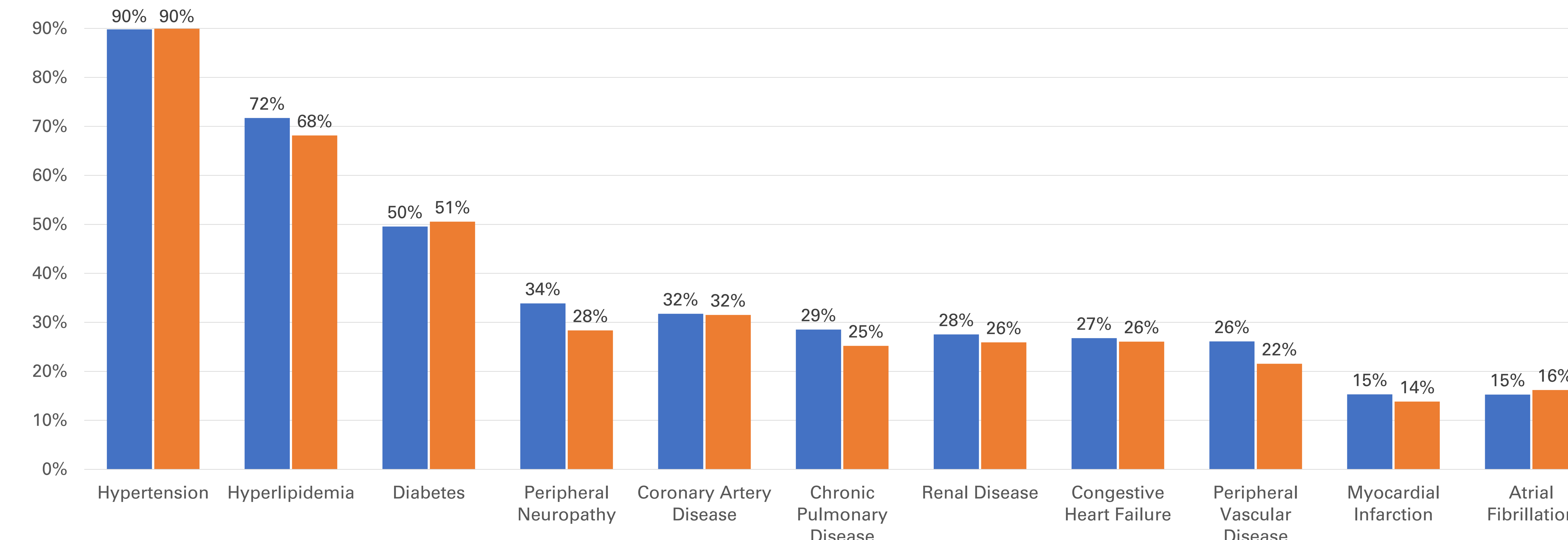
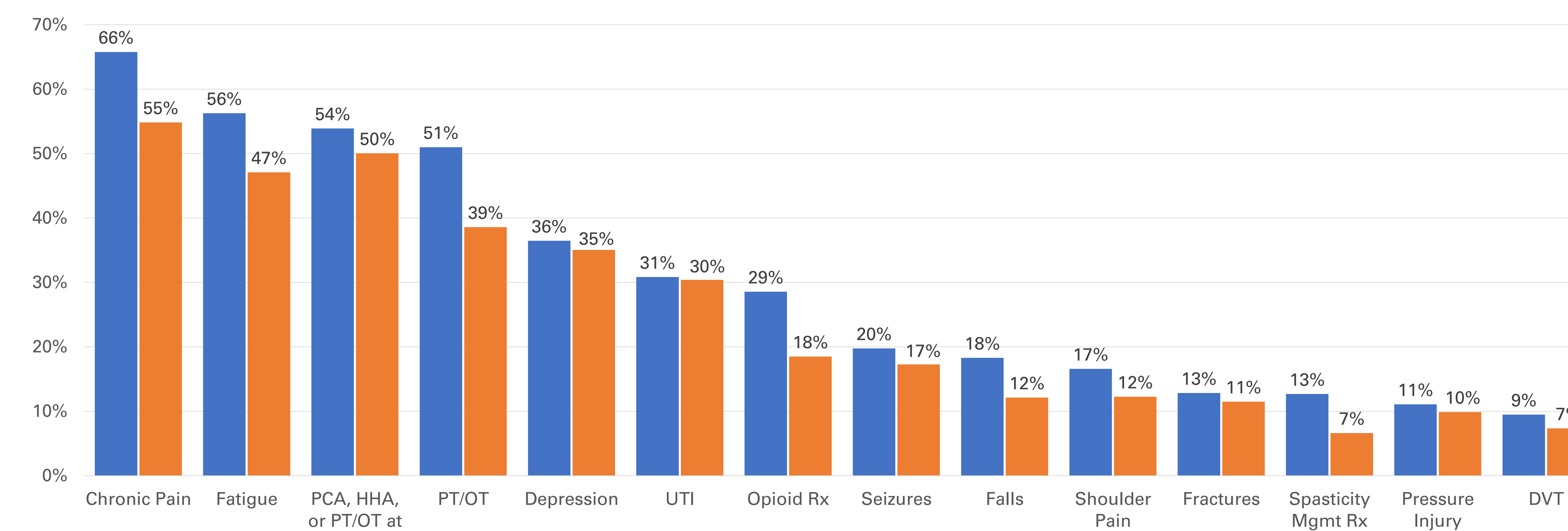


Figure 2. Outcomes 1-year Post-Discharge in Closed and Open Claims



PCA= Personal Care Assistant; HHA= Home Health Aid; PT/OT=Physical or Occupational Therapy; UTI=Urinary Tract Infection; DVT= Deep Vein Thrombosis

Results

- The number of AIS admissions found in open claims was over 10-times greater than closed claims. Claims activity criteria applied in open claims retained a greater proportion of patients than continuous enrollment criteria in closed claims (Table 1)
- Patients in open claims were older, more likely to be enrolled in Medicare, and less likely to be enrolled in Medicaid (Table 2)
- For most baseline comorbidities, similar prevalence was observed in closed and open claims. But notably higher rates were observed in closed claims for several conditions: hyperlipidemia, peripheral neuropathy, chronic pulmonary disease, and peripheral vascular disease (Figure 1)
- Higher rates were observed in closed claims across all follow-up outcomes. The largest differences were seen for chronic pain, fatigue, use of physical or occupational therapy, opioid prescriptions, shoulder pain, and spasticity management (Figure 2)

Conclusions

- Proxy enrollment criteria applied to open claims produced baseline characteristic comparable to closed claims
- Differences in post-discharge outcomes suggest that open claims have incomplete capture over time, making them less reliable for longitudinal outcomes analysis
- Further research is needed to optimize proxy enrollment criteria for open claims and to identify specific settings and therapeutic areas where open claims have the most complete data capture

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