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Introduction

- Cancer patients experience time toxicity from time-related treatment consequences
- Advances in care may prolong survival, but a significant portion of added time is spent in medical care
- Multidisciplinary care required for pituitary adenomas may lead to time toxicity
- We sought to characterize time burden of office visits for pituitary adenoma patients in the MarketScan database from 2016-2019

CPT code	AMA time estimation (minutes)	2016 claims (% of yearly, n=6185)	2017 claims (% of yearly, n=2338)	2018 claims (% of yearly, n=1193)	2019 claims (% of yearly, n=873)
99201	10	0.92%	0.13%	0.08%	0.34%
99202	22	2.18%	0.34%	0.34%	0.34%
99203	36	10.95%	1.67%	1.93%	1.15%
99204	52	21.20%	3.38%	4.44%	3.09%
99205	67	8.02%	1.41%	1.09%	1.83%
99211	5	2.52%	3.29%	3.02%	4.24%
99212	15	2.73%	5.05%	4.02%	2.52%
99213	25	17.48%	27.07%	26.66%	26.69%
99214	35	28.65%	49.83%	50.29%	52.35%
99215	47	5.35%	7.87%	8.13%	7.45%

Table 1 (Above): CPT code and AMA guideline estimation of time length. Number of claims per CPT code per year.

Methods

- IBM MarketScan Commercial Claims database was used to generate a cohort of patients with first-time office visits for primary diagnosis of pituitary adenoma in 2016 (CPT 9920X and ICD-10 D35.2) (Figure 1)
- This cohort was followed for additional claims involving new or return visits for pituitary adenoma from 2016-2019 (CPT 9920X and 9921X)
- Total visit number was compiled for each patient, visit length was quantified using average AMA estimates (Table 1)
- One-way ANOVA and two-sample t-tests were performed (a=0.05)

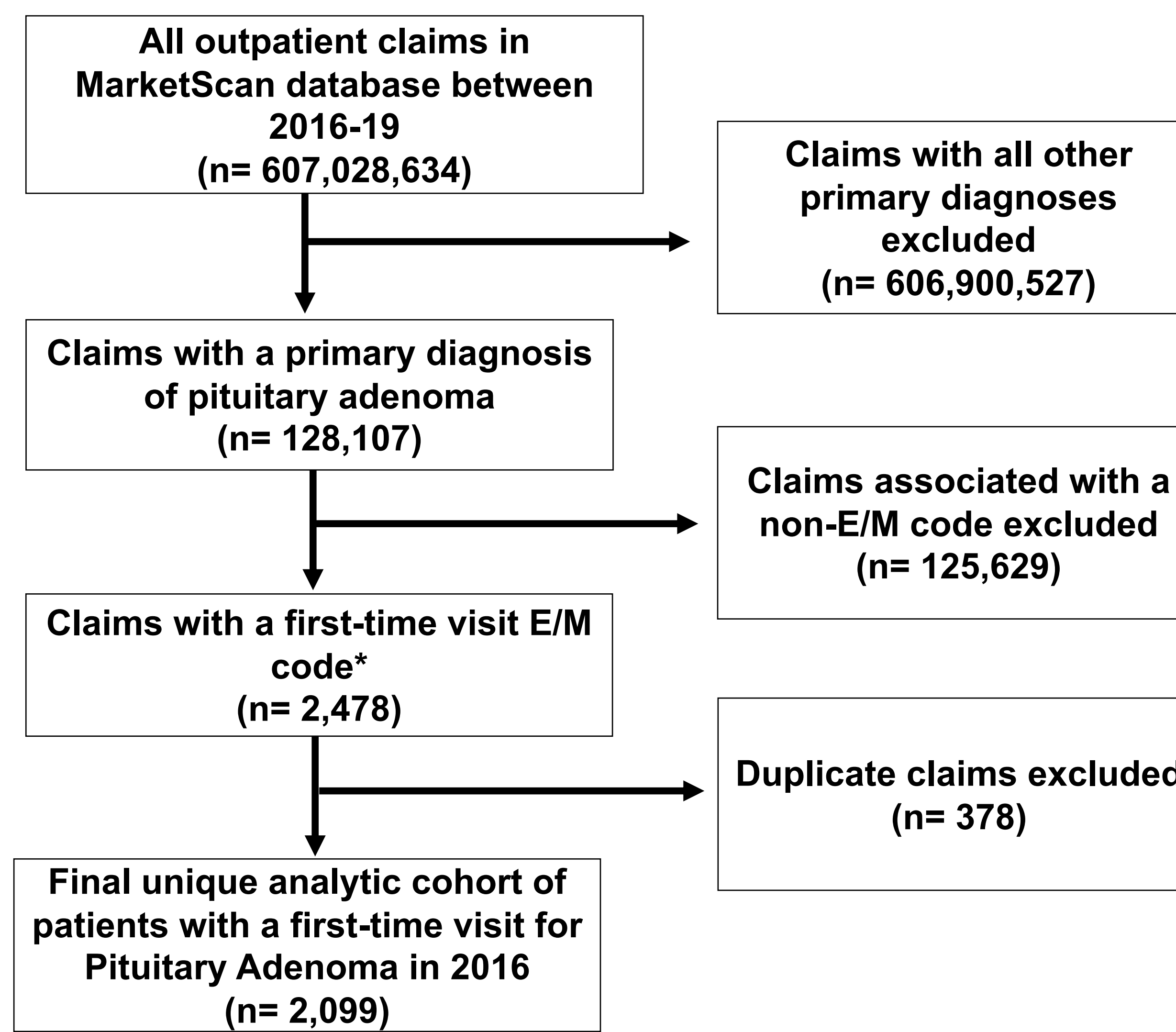


Figure 1 (Above): 2016– cohort attrition diagram

Results

- In 2016, 2,099 patients received pituitary adenoma primary diagnosis
- 8,490 additional visits for this cohort from 2016-2019: 892 (10.5%) new and 7,598 (89.5%) return
- Of new visits, 29.3% with endocrinologists (n=857), 18.7% with neurosurgeons (n=546), 3.9% with otolaryngologists (n=113)
- 99204 (n=1,470; 49.2%) and 99214 (n=3,994; 52.6%) were most frequently billed codes
- Average return visit with otolaryngologists was shorter than endocrinologists (27.8 minutes vs. 33.9 minutes, p<0.001)
- Total time at visits decreased significantly each year, from 113 minutes (2016) to 69 minutes (2019) (p<0.001)

Year	Number of visits per patient [mean (SD)]	Time per patient [mean (SD)]	Time per visit [mean (SD)]
2016	2.95 (2.34)	113.02 (79.88)	38.36 (14.16)
2017	2.61 (2.24)	84.05 (78.34)	32.2 (10.30)
2018	2.15 (1.61)	70.2 (54.69)	32.65 (10.06)
2019	2.13 (1.81)	69.1 (56.63)	32.44 (10.47)
2016-2019 Cumulative	9.84 (4.04)	336.37 (136.806)	---

Table 2 (Above): Number of visits per patient, time per patient and time per visit, by year.

Total minutes spent per patient per year, 2016-2019

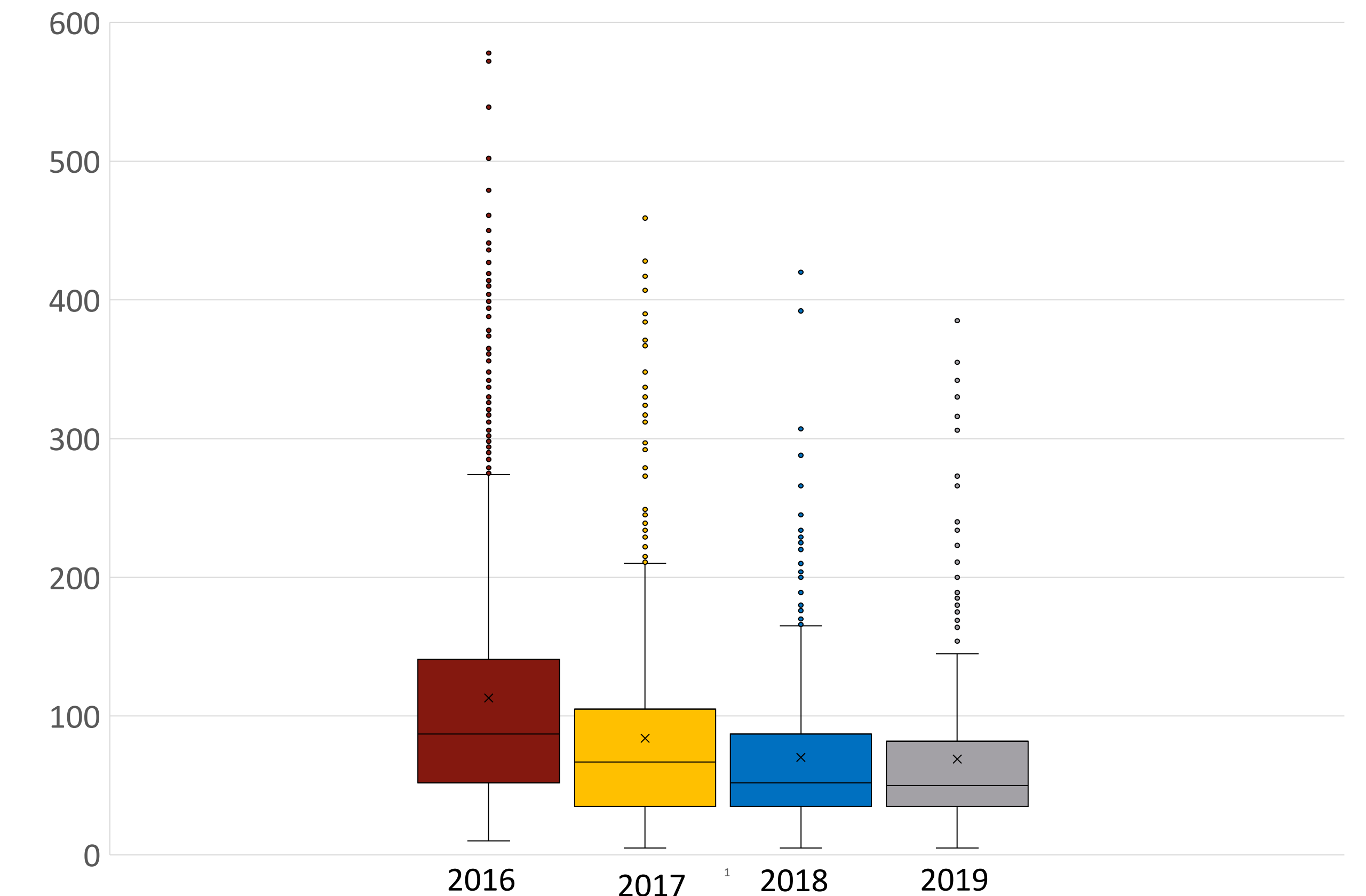


Figure 2 (Above): Total minutes spent per patient per year at outpatient visits regarding pituitary adenoma

Discussion

- From 2016-2019, patients spent an average of over 300 minutes in outpatient visits for pituitary adenomas before travel time, laboratory time, or procedures
- Patients spent less time at visits each progressive year
- A multidisciplinary approach is needed to address potential time toxicity in pituitary care
- Must determine if coding time differences are legitimate or a function of specialty-specific preferences

Limitations

- E/M codes were the only measurement of time available within the database, so were used despite possible flaws
- Translating E/M code into a time measurement for outpatient visits does not consider other aspects of E/M coding

Conclusions

- This is the first study to quantify time burden of office visits for pituitary care
- We likely underestimate outpatient time toxicity for pituitary adenoma patients
- These results may inform future studies to improve efficiency and access to pituitary care

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