Inpatient Constipation in Migraine Patients Prescribed Preventive Medications in a US Electronic Health Record Database

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ABSTRACT

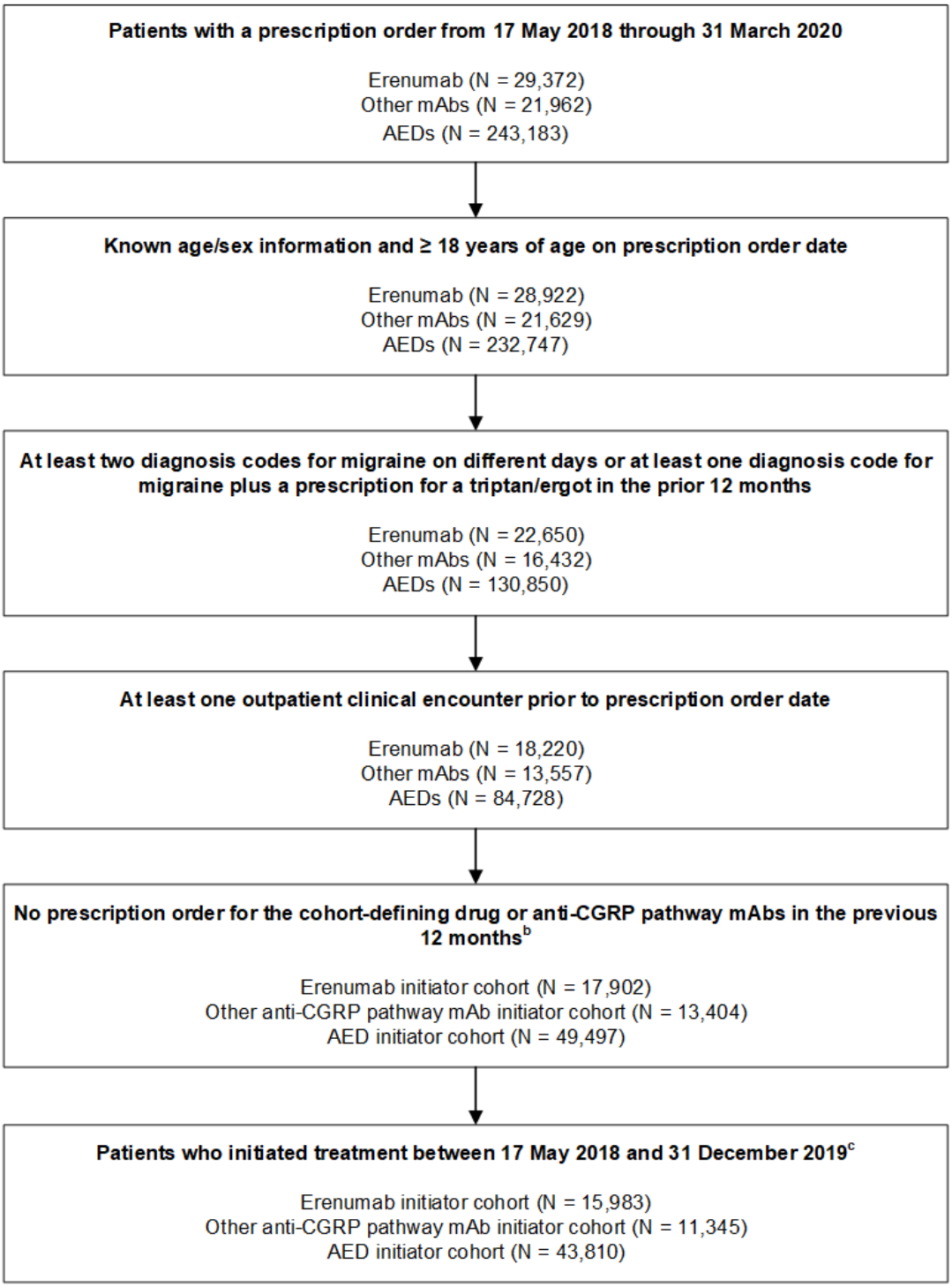
Introduction: Erenumab, an anti-calcitonin gene-related peptide (CGRP) pathway monoclonal antibody (mAb), was approved for migraine prevention in the United States in May 2018. Approval of other mAbs (galcanezumab, fremanezumab, and eptinezumab) in the class followed thereafter. We estimated the risk of inpatient constipation among migraine patients prescribed anti-CGRP pathway mAbs and standard of care anti-epileptic drugs (AEDs).

Methods: Within the Optum Electronic Health Record Research Database, patients with migraine who initiated erenumab, other mAbs, and AEDs were identified from May 2018 through March 2020. Erenumab initiators were propensity score-matched separately to initiators of other mAbs and AEDs. Among patients who initiated treatment by 31 December 2019, incident inpatient constipation events within 90 days following treatment initiation were identified. Odds ratios (ORs) were calculated comparing risk of inpatient constipation among matched erenumab initiators relative to matched comparators.

Results: We identified 15,983 erenumab, 11,345 other mAb, and 43,810 AED initiators who met study criteria and initiated treatment between 17 May 2018 and 31 December 2019 (Figure). Among matched initiators, inpatient constipation risk was 0.46% (95% confidence interval (CI): 0.35-0.60) for erenumab and 0.44% (95%CI: 0.33-0.58) for other mAbs, with a corresponding OR of 1.06 (95%CI: 0.72-1.55) (Table). Among matched erenumab and AED initiators, inpatient constipation risk was 0.53% (95%CI: 0.42-0.66) and 0.76% (95%CI: 0.62-0.92), respectively, and the OR was 0.69 (95%CI: 0.51-0.94).

Conclusion: Risk of inpatient constipation within 90 days of treatment initiation was similar among patients prescribed erenumab and other anti-CGRP pathway mAbs, and slightly higher among patients prescribed AEDs.

Figure. Formation of Erenumab, Other Anti-CGRP Pathway mAb, and AED Initiator Cohorts, Optum Electronic Health Record Research Database[a]



Abbreviations: AED: anti-epileptic drug; CGRP: calcitonin gene-related peptide; mAbs, monoclonal antibodies.

[a] To identify initiators, only the earliest prescription order during the study period was assessed for cohort eligibility.

[b] Patients were also required to have known geographic region.

[c] Restricted to patients who initiated treatment by 31 December 2019 to ensure patients had the requisite amount of follow-up time for the 90-day risk window.

Table. Risk of Inpatient Constipation Among Erenumab, Other Anti-CGRP Pathway mAb[a], and AED Initiators[b], Pre- and Post-Propensity Score Matching, Optum Electronic Health Record Research Database

	Initiators[c]	Inpatient Constipation[d]	Risk of Inpatient Constipation		Odds Ratio[e] (95% CI)
	N	*N*	%	95% CI	
Pre-Matching					
Erenumab	15,983	84	0.53	0.42 - 0.65	
Other mAbs	11,345	50	0.44	0.33 - 0.58	
AEDs	43,810	398	0.91	0.82 - 1.00	
Post-Matching					
Erenumab vs. Other mAbs Comparison					
Erenumab	11,670	54	0.46	0.35 - 0.60	1.06 (0.72 – 1.55)
Other mAbs	11,172	49	0.44	0.33 - 0.58	
Erenumab vs. AEDs Comparison					
Erenumab	13,669	72	0.53	0.42 - 0.66	0.69 (0.51 – 0.94)
AEDs	13,752	104	0.76	0.62 - 0.92	

Abbreviations: AED: anti-epileptic drug; CGRP: calcitonin gene-related peptide; CI: confidence interval; mAb, monoclonal antibody.
[a] Other anti-CGRP pathway monoclonal antibodies included fremanezumab, galcanezumab, and eptinezumab.
[b] Standard of care anti-epileptic drugs included carbamazepine, gabapentin, topiramate, valproate sodium/valproic acid/divalproex sodium, and zonisamide.
[c] This analysis included initiators identified from 17 May 2018 - 31 December 2019 to ensure patients had the requisite amount of follow-up time for the 90-day risk window.
[d] Inpatient constipation was defined as constipation recorded during an inpatient hospital or emergency department visit. Inpatient constipation events were identified within a 90-day risk window following the index date, starting from the day after the index date through the earliest of: end of the 90-day risk window, switching of migraine preventive therapy, or end of the study period (31 March 2020).
[e] Odds ratio comparing propensity score-matched erenumab initiators to propensity-score matched comparators.