

Support for MACRA Physician-focused Payment Model Technical Advisory Committee

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Table A-1. Number and Rate of Beneficiaries with E&M Visits, ED Visits, Observation Stays, or Hospitalizations for Migraine or Cluster Headaches¹ as a Principal or Secondary Diagnosis among Medicare Beneficiaries² 65 Years and Older in 2016

	Number and Rate of Beneficiaries with E&M Visits for Migraine or Cluster Headaches	Number and Rate of Beneficiaries with ED Visits for Migraine or Cluster Headaches	Number and Rate of Beneficiaries with Observation Stays for Migraine or Cluster Headaches	Number and Rate of Beneficiaries with Hospitalizations for Migraine or Cluster Headaches
Number of Eligible Medicare Beneficiaries (Denominator, N)	28,056,083	28,056,083	28,056,083	28,056,083
Number of Beneficiaries with Migraine or Cluster Headache (Numerator, N)	172,869 ³	8,816 ⁴	10,129 ⁴	42,415 ⁴
% of all Eligible Medicare Beneficiaries 65+ (Rate, %)	0.62%	0.03%	0.04%	0.15%

Source: Medicare Part A and B Research Identifiable Files, 2016

Notes.

1. ICD-10 codes for migraine or cluster headaches are included in Appendix 1.

2. Medicare beneficiaries who were younger than 65, enrolled in Medicare Advantage, living outside of the U.S., or covered through end-stage renal disease program were excluded from this analysis. The beneficiaries had to be enrolled in Medicare Parts A and B for at least one month in 2016.

3. Numerator is defined as those beneficiaries with at least one E&M visit which included a headache ICD diagnosis as **either the principal or secondary ICD code**.

4. Numerator is defined as the number of eligible Medicare Beneficiaries with ED, Observation Stay, or Hospitalizations, respectively, which included a **headache ICD diagnosis as either the principal or secondary ICD code**.

Table A-2. Number and Rate of Beneficiaries with ED Visits, Observation Stays, or Hospitalizations for Migraine or Cluster Headaches¹ as a Principal Diagnosis Only among Medicare Beneficiaries² 65 Years and Older in 2016

	Number and Rate of Beneficiaries with E&M Visits for Migraine or Cluster Headaches	Number and Rate of Beneficiaries with ED Visits for Migraine or Cluster Headaches	Number and Rate of Beneficiaries with Observation Stays for Migraine or Cluster Headaches	Number and Rate of Beneficiaries with Hospitalizations for Migraine or Cluster Headaches
Number of Eligible Medicare Beneficiaries (Denominator, N)	28,056,083	28,056,083	28,056,083	28,056,083
Number of Beneficiaries with Migraine or Cluster Headache (Numerator, N)	172,869 ³	3,426 ⁴	1,615 ⁴	2,613 ⁴
% of all Eligible Medicare Beneficiaries 65+ (Rate, %)	0.62%	0.01%	0.01%	0.01%

Source: Medicare Part A and B Research Identifiable Files, 2016

Notes.

1. ICD-10 codes for migraine or cluster headaches are included in Appendix 1.
2. Medicare beneficiaries who were younger than 65, enrolled in Medicare Advantage, living outside of the U.S., or covered through end-stage renal disease program were excluded from this analysis. The beneficiaries had to be enrolled in Medicare Parts A and B for at least one month in 2016.
3. Numerator is defined as those beneficiaries with at least one E&M visit which included a headache ICD diagnosis as **either** the principal **or secondary** ICD code.
4. Numerator is defined as the number of eligible Medicare Beneficiaries with ED, Observation Stay, or Hospitalizations, respectively, which included a **headache ICD diagnosis as the principal ICD code.**

Table B-1. Number & Rate of Beneficiaries with ED Visits, Observation Stays, or Hospitalizations (A) for Any Reason, or (B) for Migraine or Cluster Headaches¹ as a Principal or Secondary Diagnosis among Medicare Beneficiaries² 65 Years and Older with Migraine or Cluster Headaches in 2016

	Number and Rate of Beneficiaries with ED Visits for Migraine or Cluster Headaches	Number and Rate of Beneficiaries with Observation Stays for Migraine or Cluster Headaches	Number and Rate of Beneficiaries with Hospitalizations for Migraine or Cluster Headaches
Number of Beneficiaries with at least 1 E&M Visit with ICD-10 Code for Migraine or Cluster Headache (as principal or secondary diagnosis) (Denominator, N) ³	172,869	172,869	172,869
A. Number of Beneficiaries with ED Visit, Observation Stays or Hospitalizations for Any Reason (Numerator, N) ⁴	20,700	16,697	45,197
% of Medicare Beneficiaries 65+ with Migraine/Cluster Headache Who Had ED Visit/Observation Stay/Hospitalization for any reason (Rate, %)	11.97%	9.66%	26.15%
B. Number of Beneficiaries with ED Visit, Observation Stays or Hospitalizations for Migraine or Cluster Headache (Numerator, N) ⁵	4,898	4,478	13,555
% of all Medicare Beneficiaries 65+ with Migraine/Cluster Headache Who Had ED Visit/Observation Stay/Hospitalization for Migraine or Cluster Headache (Rate, %)	2.83%	2.59%	7.84%

Source: Medicare Part A and B Research Identifiable Files, 2016

Notes.

1. ICD-10 codes for migraine or cluster headaches are included in Appendix 1.
2. Medicare beneficiaries who were younger than 65, enrolled in Medicare Advantage, living outside of the U.S., or covered through end-stage renal disease program were excluded from this analysis. The beneficiaries had to be enrolled in Medicare Parts A and B for least one month in 2016.
3. Denominator is defined as those beneficiaries with at least one E&M visit which included a headache ICD diagnosis as **either the principal or secondary ICD code**.
4. Numerator is defined as the number of eligible Medicare beneficiaries with ED, observation stay, or hospitalizations, respectively for any reason among those beneficiaries identified as denominator.
5. Numerator is defined as the number of eligible Medicare beneficiaries with ED, observation stay, or hospitalizations, respectively, which included a headache ICD diagnosis as **either the principal or secondary ICD code among those beneficiaries identified as denominator**.

Table B-2. Number & Rate of Beneficiaries with ED Visits, Observation Stays, or Hospitalizations (A) for Any Reason, or (B) for Migraine or Cluster Headaches ¹ as a Principal Diagnosis Only among Medicare Beneficiaries ² 65 Years and Older with Migraine or Cluster Headaches in 2016			
	Number and Rate of Beneficiaries with ED Visits for Migraine or Cluster Headaches	Number and Rate of Beneficiaries with Observation Stays for Migraine or Cluster Headaches	Number and Rate of Beneficiaries with Hospitalizations for Migraine or Cluster Headaches
Number of Beneficiaries with at least 1 E&M Visit with ICD-10 Code for Migraine or Cluster Headache (as Principal or Secondary Diagnosis) (Denominator, N) ³	172,869	172,869	172,869
A. Number of Beneficiaries with ED Visit, Observation Stays or Hospitalizations for Any Reason (Numerator, N) ⁴	20,700	16,697	45,197
% of Medicare Beneficiaries 65+ with Migraine/Cluster Headache Who Had ED Visit/Observation Stay/Hospitalization for any reason (Rate, %)	11.97%	9.66%	26.15%
B. Number of Beneficiaries with ED Visit, Observation Stays or Hospitalizations for Migraine or Cluster Headache (Numerator, N) ⁵	3,032	1,227	1,943
% of all Medicare Beneficiaries 65+ with Migraine/Cluster Headache Who Had ED Visit/Observation Stay/Hospitalization for Migraine or Cluster Headache (Rate, %)	1.75%	0.71%	1.12%

Source: Medicare Part A and B Research Identifiable Files, 2016

Notes.

1. ICD-10 codes for migraine or cluster headaches are included in Appendix 1.
2. Medicare beneficiaries who were younger than 65, enrolled in Medicare Advantage, living outside of the U.S., or covered through end-stage renal disease program were excluded from this analysis. The beneficiaries had to be enrolled in Medicare Parts A and B for least one month in 2016.
3. Denominator is defined as those beneficiaries with at least one E&M visit which included a headache ICD diagnosis as **either** the principal **or secondary** ICD code.
4. Numerator is defined as the number of eligible Medicare beneficiaries with ED, observation stay, or hospitalizations, respectively for any reason among those beneficiaries identified as denominator.
5. Numerator is defined as the number of eligible Medicare beneficiaries with ED, observation stay, or hospitalizations, respectively, which included a headache ICD diagnosis as the principal ICD code among those beneficiaries identified as denominator.

Appendix 1. Prevalence and Utilization Analyses for Medicare FFS Beneficiaries with Migraine or Cluster Headaches

Methods: By using the Medicare fee-for-service (FFS) research identifiable files (RIFs), we identified Medicare beneficiaries who had at least one E&M visit with an ICD-10 code for migraine or cluster headaches^[1] in 2016. Medicare beneficiaries who were younger than 65, enrolled in Medicare Advantage, living outside of the U.S., or covered through the end-stage renal disease program were excluded from this analysis. To be included, the beneficiaries had to be enrolled in Medicare Parts A and B for at least one month in 2016. First, we calculated prevalence as the percentage of eligible Medicare beneficiaries who had at least one E&M visit with migraine or cluster headache in 2016. Next, we examined the utilization rates including ED visits, observation stays, and hospitalizations among those eligible Medicare beneficiaries, regardless of their headache presence (by presence of ICD-10 code for the visit or stay) status. Lastly, we examined the all-cause and headache-specific utilization rates including ED visits, observation stays, and hospitalizations among those Medicare beneficiaries with migraine or cluster headaches.

Notes: In Table A-1, we see that out of the 28 million beneficiaries in the total eligible population, 8,816, 10,129, and 42,415 beneficiaries were designated as having an ED visit, observation stay, or hospitalization with principal or secondary ICD for migraine or cluster headache, respectively. In Table B-1, we see that out of the 172,869 beneficiaries identified as denominator, 4,898, 4,478, or 13,555 were designated as having an ED visit, observation stay, or hospital admission, respectively with the headache ICD. The other 3,918, 5,651, or 28,860 beneficiaries had the corresponding services with a migraine or cluster headache ICD and were in the total 28 million population. However, they did not have 1+ E&M visits with principal or secondary ICD for the headache and are therefore not included in Table B-1. It is noteworthy to indicate that 172,869 Medicare beneficiaries with migraine or cluster headaches plus these additional 38,429 beneficiaries at the maximum would provide a broad prevalence estimate of migraine/cluster headache patients.

[1] ICD-10 Code for Migraine or Cluster Headache

Code	Description
G43001	Migraine without aura, not intractable, with status migrainosus
G43009	Migraine without aura, not intractable, without status migrainosus
G43011	Migraine without aura, intractable, with status migrainosus
G43019	Migraine without aura, intractable, without status migrainosus
G43101	Migraine with aura, not intractable, with status migrainosus
G43109	Migraine with aura, not intractable, without status migrainosus
G43111	Migraine with aura, intractable, with status migrainosus
G43119	Migraine with aura, intractable, without status migrainosus
G43401	Hemiplegic migraine, not intractable, with status migrainosus
G43409	Hemiplegic migraine, not intractable, without status migrainosus
G43411	Hemiplegic migraine, intractable, with status migrainosus
G43419	Hemiplegic migraine, intractable, without status migrainosus
G43501	Persistent migraine aura without cerebral infarction, not intractable, with status migrainosus
G43509	Persistent migraine aura without cerebral infarction, not intractable, without status migrainosus
G43511	Persistent migraine aura without cerebral infarction, intractable, with status migrainosus
G43519	Persistent migraine aura without cerebral infarction, intractable, without migrainosus
G43601	Persistent migraine aura with cerebral infarction, not intractable, with status migrainosus
G43609	Persistent migraine aura with cerebral infarction, not intractable, without status migrainosus
G43611	Persistent migraine aura with cerebral infarction, intractable, with status migrainosus
G43619	Persistent migraine aura with cerebral infarction, intractable, without status migrainosus
G43701	Chronic migraine without aura, not intractable, with status migrainosus
G43709	Chronic migraine without aura, not intractable, without status migrainosus
G43711	Chronic migraine without aura, intractable, with status migrainosus
G43719	Chronic migraine without aura, intractable, without status migrainosus
G43A0	Cyclical vomiting, not intractable
G43A1	Cyclical vomiting, intractable
G43B0	Ophthalmoplegic migraine, not intractable
G43B1	Ophthalmoplegic migraine, intractable
G43C0	Periodic headache syndromes in child or adult, not intractable
G43C1	Periodic headache syndromes in child or adult, intractable
G43D0	Abdominal migraine, not intractable
G43D1	Abdominal migraine, intractable
G43801	Other migraine, not intractable, with status migrainosus
G43809	Other migraine, not intractable, without status migrainosus
G43811	Other migraine, intractable, with status migrainosus
G43819	Other migraine, intractable, without status migrainosus
G43821	Menstrual migraine, not intractable, with status migrainosus
G43829	Menstrual migraine, not intractable, without status migrainosus
G43831	Menstrual migraine, intractable, with status migrainosus
G43839	Menstrual migraine, intractable, without status migrainosus
G43901	Migraine, unspecified, not intractable, with status migrainosus
G43909	Migraine, unspecified, not intractable, without status migrainosus
G43911	Migraine, unspecified, intractable, with status migrainosus
G43919	Migraine, unspecified, intractable, without status migrainosus
G44001	Cluster headache syndrome, unspecified, intractable
G44009	Cluster headache syndrome, unspecified, not intractable
G44011	Episodic cluster headache, intractable
G44019	Episodic cluster headache, not intractable