## Appendix

### Appendix Table 1. List of Acute Treatment Medications

| Level A | Level B | Level C | Level U | Others |
|---------|---------|---------|---------|--------|
| Analgesics | Ergots | NSAIDs | NSAIDs | NSAIDs |
| Acetaminophen | Ergotamine/caffeine | Flurbiprofen/Ketoprofen | Celecoxib | Ketorolac tromethamine spray |
| Ergots | NSAIDs | Opioid |
| Dihydroergotamine | Isometheptene | Codeine |
| NSAIDs | Others |
| Aspirin | Butalbital |
| Diclofenac | |
| Ibuprofen | |
| Naproxen | |
| Opioids | Combinations | Combination |
| Butorphanol nasal spray | Codeine/acetaminophen | Butalbital/acetaminophen/caffeine |
| Triptans | |
| Almotriptan | |
| Eletriptan | |
| Frovatriptan | |
| Naratriptan | |
| Rizatriptan | |
| Sumatriptan | |
| Zolmitriptan | |
| Combinations | |
| Acetaminophen/aspirin/caffeine | |
| Sumatriptan/naproxen | |

This list was adapted from the 2000 American Academy of Neurology Review. NSAID – non-steroidal anti-inflammatory drug.
### Appendix Table 2. Family and Link Functions Used in Generalized Linear Model (GLM) Regressions

| Outcome                                    | 1-12 months | 13-24 months |
|--------------------------------------------|-------------|--------------|
|                                            | Family      | Link Function| Family      | Link Function|
| **HRU**                                    |             |              |             |              |
| Migraine and/or HA-related physician visits| Gamma       | Power 0.2    | Gamma       | Power -0.1  |
| Costs                                      |             |              |             |              |
| All-cause total costs                      | Poisson     | Power -0.1   | Poisson     | Power 0     |
| Migraine and/or HA-related total costs     | Gamma       | Power 0      | Gamma       | Power 0.2   |

**Remaining outcomes were run as logistic regressions**
| Characteristic, n (%) | Triptan-Only Continuers N = 4,371 | All N = 3,102 | Triptan Discontinuers with Acute Meds N = 944 | Triptan Continuers with Acute Meds N = 2,158 |
|----------------------|-------------------------------------|----------------|-----------------------------------------------|-----------------------------------------------|
| **Age (years)**      |                                     |                |                                               |                                               |
| 18–24                | 494 (11.3)                          | 314 (10.1)     | 128 (13.6)                                    | 186 (8.6)                                     |
| 25–34                | 865 (19.8)                          | 658 (21.2)     | 221 (23.4)                                    | 437 (20.3)                                    |
| 35–44                | 1,391 (31.8)                        | 996 (32.1)     | 269 (28.5)                                    | 727 (33.7)                                    |
| 45+                  | 1,621 (37.1)                        | 1,134 (36.6)   | 326 (34.5)                                    | 808 (37.4)                                    |
| **Gender**           |                                     |                |                                               |                                               |
| Female               | 3,583 (82.0)                        | 2,592 (83.6)   | 764 (80.9)                                    | 1,828 (84.7)                                  |
| Male                 | 788 (18.0)                          | 510 (16.4)     | 180 (19.1)                                    | 330 (15.3)                                    |
| **Region**           |                                     |                |                                               |                                               |
| Northeast            | 333 (7.6)                           | 220 (7.1)      | 74 (7.8)                                      | 146 (6.8)                                     |
| Midwest              | 1,332 (30.5)                        | 835 (26.9)     | 243 (25.7)                                    | 592 (27.4)                                    |
| South                | 1,788 (40.9)                        | 1,406 (45.3)   | 444 (47.0)                                    | 962 (44.6)                                    |
| West                 | 918 (21.0)                          | 641 (20.7)     | 183 (19.4)                                    | 458 (21.2)                                    |
| **Plan type**        |                                     |                |                                               |                                               |
| Point of service     | 3,384 (77.4)                        | 2,439 (78.6)   | 733 (77.6)                                    | 1,706 (79.1)                                  |
| Health maintenance organization | 405 (9.3) | 280 (9.0) | 84 (8.9) | 196 (9.1) |
| Other*               | 582 (13.3)                          | 383 (12.3)     | 127 (13.5)                                    | 256 (11.8)                                    |
| **Elixhauser comorbidity count** | | | | |
| 0                    | 1,953 (44.7)                        | 1,022 (32.9)   | 349 (37.0)                                    | 673 (31.2)                                    |
| 1                    | 1,265 (28.9)                        | 894 (28.8)     | 263 (27.9)                                    | 631 (29.2)                                    |
| 2–3                  | 913 (20.9)                          | 815 (26.3)     | 236 (25.0)                                    | 579 (26.8)                                    |
| 4+                   | 240 (5.5)                           | 371 (12.0)     | 96 (10.2)                                     | 275 (12.7)                                    |
| **Migraine-related comorbidities** | | | | |
| Pain                 | 970 (22.2)                          | 1,125 (36.3)   | 309 (32.7)                                    | 816 (37.8)                                    |
| Mood disorders       | 864 (19.8)                          | 906 (29.2)     | 242 (25.6)                                    | 664 (30.8)                                    |
| Rhinitis             | 753 (17.2)                          | 611 (19.7)     | 176 (18.6)                                    | 435 (20.2)                                    |
| Sleep disturbances   | 404 (9.2)                           | 517 (16.7)     | 134 (14.2)                                    | 383 (17.7)                                    |
| **Cardiovascular disease-related comorbidities** | | | | |
| Hyperlipidemia       | 875 (20.0)                          | 729 (23.5)     | 217 (23.0)                                    | 512 (23.7)                                    |
| Hypertension         | 733 (16.8)                          | 708 (22.8)     | 216 (22.9)                                    | 492 (22.8)                                    |
| Obesity              | 327 (7.5)                           | 334 (10.8)     | 98 (10.4)                                     | 236 (10.9)                                    |
| **Ischemic disease (coronary heart disease, peripheral vascular disease, and/or cerebrovascular disease)** | | | | |
| Ischemic disease     | 181 (4.1)                           | 235 (7.6)      | 69 (7.4)                                      | 166 (7.7)                                     |
| **Index triptan agent** | | | | |
| Sumatriptan          | 2,702 (61.8)                        | 1,972 (63.6)   | 631 (66.8)                                    | 1,341 (62.1)                                  |
| Rizatriptan          | 814 (18.6)                          | 557 (18.0)     | 167 (17.7)                                    | 390 (18.1)                                    |
| Eletriptan           | 437 (10.0)                          | 293 (9.4)      | 69 (7.3)                                      | 224 (10.4)                                    |
| Zolmitriptan         | 199 (4.6)                           | 115 (3.7)      | 28 (3.0)                                      | 87 (4.0)                                      |
| Naratriptan          | 88 (2.0)                            | 71 (2.3)       | 17 (1.8)                                      | 54 (2.5)                                      |
| Frovatriptan         | 73 (1.7)                            | 58 (1.9)       | 20 (2.1)                                      | 38 (1.8)                                      |
| Almotriptan          | 36 (0.8)                            | 18 (0.6)       | 5 (0.5)                                       | 13 (0.6)                                      |
| Sumatriptan combination | 22 (0.5) | 18 (0.6) | 7 (0.7) | 11 (0.5) |
| **Presence of chronic migraine diagnosis** | | | | |
| Pre-index count of distinct medication classes for acute treatment of migraine** | | | | |
| 0                    | 3359 (76.8)                         | 1711 (55.2)    | 580 (61.4)                                    | 1,131 (52.4)                                  |
| 1                    | 888 (20.3)                          | 1115 (35.9)    | 289 (30.6)                                    | 826 (38.3)                                    |
| 2+                   | 124 (2.8)                           | 276 (8.9)      | 75 (7.9)                                      | 201 (9.3)                                     |
| **Pre-index migraine-related inpatient or emergency department visit** | | | | |
| 489 (11.2) | 626 (20.2) | 179 (19.0) | 447 (20.7) |
## Pre-index all-cause total costs

| Quartile 1 (≤$1,287): | 1,198 (27.4) | 520 (16.8) | 198 (21.0) | 322 (14.9) |
| Quartile 2 ($1,287–$3,817): | 1,171 (26.8) | 629 (20.3) | 204 (21.6) | 425 (19.7) |
| Quartile 3 ($3,819–$10,860): | 1,070 (24.5) | 829 (26.7) | 234 (24.8) | 595 (27.6) |
| Quartile 4 ($10,865–$645,097) | 932 (21.3) | 1,124 (36.2) | 308 (32.6) | 816 (37.8) |

Note: All data are n (%) unless otherwise indicated.

NSAID – nonsteroidal anti-inflammatory drug, TIR – triptan insufficient responder.

*Plan type - Other includes preferred provider organizations, exclusive provider organizations, and other unspecified organizations

**Distinct medication classes for acute treatment of migraines includes butalbital combinations, ergots, NSAIDs, and opioids including opioid combinations.
### Appendix Table 4. Unadjusted Healthcare Resource Utilization Over Months 1–12 and Months 13–24 Post-Index

|                          | Triptan Only Continuer |                           | Potential TIR Patients |                           |
|--------------------------|------------------------|---------------------------|------------------------|---------------------------|
|                          | N = 4,371              | N = 3,102                 |                        |                           |
|                          | Month 1–12             | Month 13–24               | Month 1–12             | Month 13–24               |
| **All Cause**            |                        |                           |                        |                           |
| Inpatient visits         | %                      | 3.6%                      | 4.3%                   | 11.2%                     | 11.4%                     |
|                          | Mean                   | 0.05                      | 0.05                   | 0.15                      | 0.15                      |
| ED visits                | %                      | 17.5%                     | 17.3%                  | 37.4%                     | 34.8%                     |
|                          | Mean                   | 0.26                      | 0.26                   | 0.84                      | 0.78                      |
| Outpatient service claims (excluding ED visits) | %                      | 99.1%                     | 97.6%                  | 99.7%                     | 98.5%                     |
|                          | Mean                   | 12.77                     | 12.14                  | 20.17                     | 19.06                     |
| Physician office visits  | %                      | 98.2%                     | 96.4%                  | 99.7%                     | 97.7%                     |
|                          | Mean                   | 6.90                      | 6.24                   | 11.07                     | 9.86                      |
| Neurologist visits       | %                      | 25.4%                     | 17.3%                  | 40.0%                     | 30.4%                     |
|                          | Mean                   | 0.65                      | 0.40                   | 1.38                      | 0.94                      |
| **Migraine and/or Headache-Related** |                        |                           |                        |                           |
| Inpatient visits         | %                      | 0.8%                      | 0.9%                   | 6.4%                      | 5.4%                      |
|                          | Mean                   | 0.01                      | 0.01                   | 0.08                      | 0.06                      |
| ED visits                | %                      | 5.2%                      | 3.9%                   | 19.0%                     | 15.1%                     |
|                          | Mean                   | 0.06                      | 0.05                   | 0.33                      | 0.28                      |
| Outpatient service claims (excluding ED visits) | %                      | 80.3%                     | 53.5%                  | 95.8%                     | 70.4%                     |
|                          | Mean                   | 2.21                      | 1.35                   | 4.55                      | 3.01                      |
| Physician office visits  | %                      | 78.1%                     | 50.4%                  | 93.2%                     | 65.9%                     |
|                          | Mean                   | 1.71                      | 0.97                   | 3.24                      | 2.06                      |
| Neurologist visits       | %                      | 23.0%                     | 14.6%                  | 37.0%                     | 26.1%                     |
|                          | Mean                   | 0.53                      | 0.30                   | 1.13                      | 0.72                      |

ED – emergency department; TIR – triptan insufficient responder.
## Appendix Table 5. Unadjusted Healthcare Costs Over Months 1–12 and Months 13–24 Post-Index

|                        | Triptan Only Continuer N = 4,371 | Potential TIR Patients N = 3,102 |
|------------------------|-----------------------------------|----------------------------------|
|                        | Month 1–12 | Month 13–24 | Month 1–12 | Month 13–24 |
| **All-Cause Total Costs** | $8,410 | $8,504 | $18,159 | $18,750 |
| Medical                | $6,267 | $6,421 | $14,809 | $15,158 |
| Inpatient              | $725  | $929  | $2,604  | $3,023  |
| ED                     | $729  | $751  | $2,357  | $2,156  |
| Outpatient\(^a\)       | $4,812 | $4,741 | $9,848  | $9,979  |
| Evaluation & management visits | $748  | $672  | $1,227  | $1,081  |
| Neurologist visits\(^b\) | $166  | $114  | $369    | $299    |
| Prescription           | $2,143 | $2,083 | $3,350  | $3,592  |
| **Migraine and/or Headache-Related Total Costs** | $1,321 | $978  | $5,070  | $4,456  |
| Medical                | $832  | $633  | $4,128  | $3,655  |
| Inpatient              | $104  | $134  | $1,313  | $1,436  |
| ED                     | $201  | $150  | $1,023  | $796    |
| Outpatient\(^a\)       | $496  | $315  | $1,639  | $1,241  |
| OnabotulinumtoxinA (medical claims) | $32   | $34   | $153    | $181    |
| Evaluation & management visit | $198  | $109  | $379    | $233    |
| Neurologist visits\(^b\) | $89   | $50   | $212    | $140    |
| Prescription           | $489  | $345  | $941    | $802    |
| OnabotulinumtoxinA (prescription claims) | $3    | $5    | $10     | $10     |
| Acute medication       | $347  | $212  | $506    | $356    |
| Oral migraine preventive medication | $112  | $102  | $177    | $190    |

\(^a\) Excluded ED visits.

\(^b\) Includes any evaluation and management visit claims with neurology specialist

ED – emergency department; TIR – triptan insufficient responder.