Patient-Centered Headache Care Payment

AN ALTERNATIVE PAYMENT MODEL FOR PATIENT-CENTERED HEADACHE CARE

Abstract

Headache is a pervasive and common form of chronic pain among Medicare beneficiaries. The current model of reimbursement for headache care delivery does not give physicians sufficient time or resources to care for their patients, which limits opportunities to accurately diagnose complex cases, educate or counsel patients, monitor response to treatment, and coordinate care. Frequently left undiagnosed or misdiagnosed, headache sufferers may use inappropriate and unsafe medications (e.g., opioids) or visit the emergency department (ED) to seek relief from their symptoms.

The Patient-Centered Headache Care Payment (PCHCP) model is a new Alternative Payment Model (APM) with payments designed to give neurologists, primary care providers (PCPs) and other physicians with expertise in headache care the accountability, resources, and flexibility they need to deliver accurate diagnoses and appropriate, cost-effective, high-quality treatment for patients with migraine and other complex, recurrent headache disorders.

The PCHCP model would replace current evaluation and management (E/M) payments with a flexible payment[1] to enable physicians to deliver a range of services to patients without the restrictions of the current fee-for-service system. In addition, practices willing to do so could accept larger bundled versions of payments, which would include funds to pay for some or all the other services that headache patients receive. Payments under the model would enable neurologists or headache specialists to form a Headache Care Team and collaboratively treat patients with headache or to work with primary care physicians and additional health care team members such as a patient care coordinator, nutritionist, physical therapist, mental health provider, or pharmacist.to co-manage the patient's headache and other health problems.

[1] Payment varies based on patient category. Physicians would receive a 1-time payment for Category 1 patients, monthly payments for Category 2, and add-on payments (in addition to E/M) for Category 3.

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Background

The Patient-Centered Headache Care Payment (PCHCP) model, created by the American Academy of Neurology (AAN), is a new Alternative Payment Model (APM) designed to give neurologists, primary care providers (PCPs) and other physicians with expertise in headache care the accountability, resources, and flexibility they need to deliver accurate diagnoses and appropriate, cost-effective treatment for patients with migraine and other complex, recurrent headache disorders. It centers on patients and leverages the specialty care and expertise that neurologists and other headache specialists provide. It includes performance and outcome measures relevant to headache patients and uses these to adjust payments.

Two major issues contribute to delayed diagnoses or misdiagnoses for complex headaches, which drive-up costs, reduce patient quality and create a need for a Headache APM, particularly for patients with difficult-to-manage headaches:

1. Despite evidence that complex headaches are better treated by specialists[1], many headache patients often do not receive timely referrals to the appropriate physician; and
2. Evaluation and Management (E/M) payments do not support sufficient physician time with headache patients and other care coordination activities, which can lead to inaccurate diagnoses.

As a result of these issues, headache sufferers frequently go to the emergency department (ED) or urgent care (UC) and may leverage inappropriate and unsafe medications such as opioids to relieve their headache. At the same time, many patients who may be best treated by PCPs bypass those providers altogether and self-refer to neurologists or headache specialists, which contributes to neurologist overload and career burnout.[2] A number of patients, after having symptoms dismissed by their initial treating physician, cease to seek treatment and suffer in silence.

Headache is one of the most common forms of chronic pain and one of the leading causes of diminished work productivity and absenteeism.[3] Beyond expenses to the health care system from direct medical costs, a study from 2002 found that the total cost of lost productivity resulting from headache was $19.6 billion (in 2002 US dollars).[4] Approximately 7 percent of adults 65-74 and 6 percent of adults 75+ suffer from migraines, a highly disabling type of headache;[5] all of these would be eligible for our model as well as those who suffer from other complex headaches.

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[1] Soon YY, Siow HC Tan, CY. Assessment of migraineurs referred to a specialist headache clinic in Singapore: diagnosis, treatment strategies, outcomes, knowledge of migraine treatments and satisfaction. *Cephalagia*. 2005 Dec;25(12)1122-32. Available at https://www.ncbi.nlm.nih.gov/pubmed/16305601/

[2] Busis NA, Tait DS, Keran CM, et al. Burnout, career satisfaction, and well-being among US neurologists in 2016. *Neurology*. 2017 Feb.;88(8)797-808. Available at *http*://www.neurology.org/content/88/8/797

[3] Baig K and Stewart WF. Headache and migraine: a leading cause of absenteeism. *Hand Clin Neurol*. 2015; 131;447-63. Available at https://www.ncbi.nlm.nih.gov/pubmed/26563803

[4] Health care resource utilization following initiation of triptans: a retrospective claims analysis." *Journal of Managed Care and Specialty Pharmacy.* 20: 4

[5] Pleis JR, Ward BW, Lucas JW. Summary health statistics for U.S. adults: National Health Interview Survey, 2009 (provisional report). Vital Health Stat 2010;10(249). Available at http://www.cdc.gov/nchs/data/series/sr_10/sr10_249.pdf

Research shows that complex headaches, especially chronic migraine, are frequently misdiagnosed; the average delay for accurate diagnosis of migraine is approximately eight years.[6] Similarly, cluster headache, though rare, often remains unrecognized or misdiagnosed for many years.[7]

The PCHCP model would provide payments, incentives and accountability for participating physicians to make use of sufficient and flexible resources to enable efficient and effective delivery of care to patients with difficult-to-manage, complex headaches. It is anticipated that broad implementation of the model would yield cost savings for payers and society by paying neurologists and headache specialists up-front for more time with complex patients, which would result in accurate and timely diagnosis, proper use of preventive treatments, reduced use of opioids and other inappropriate prescription medications, and reduced unnecessary emergency department and urgent care use.

Model Overview

The PCHCP model is predicated on coordination of care that involves multiple providers across the health care spectrum working together to ensure patients see the most appropriate provider for their symptoms. For some patients, that may mean ensuring a speedy referral to a neurologist or headache specialist; for others, it will mean treatment in a primary care setting. Based on patient need, comorbidities, and diagnosis, the patient may require a Headache Care Team that includes a neurologist, headache care specialist, primary care physician, a patient care coordinator, nutritionist, physical therapist and/or mental health or social service provider to support patient care. Please see **Appendix A** for a description of the patient care coordinator role and how it may interact with ancillary providers.

Patients also need varying levels of care depending on their stage of treatment (e.g., diagnosis vs. treatment), the severity of their headaches, and how effectively available treatments control their headaches.

This model proposes three distinct categories based on stage and complexity of headaches:

1. Diagnosis and initial treatment for patients with undiagnosed, difficult to diagnose or poorly controlled headache disorders
2. Continued care for patients with difficult-to-manage headaches and their associated symptoms
3. Continued care for patients with well-controlled headaches

In the first two categories of patients and care, PCHCP would replace current E/M payments with a fixed payment amount. This payment could be used to deliver a range of currently not-covered services and spend needed time with patients without the restrictions of the current fee-for-service system. Please see Figure 1 for a high-level diagram modeling the referral pathway

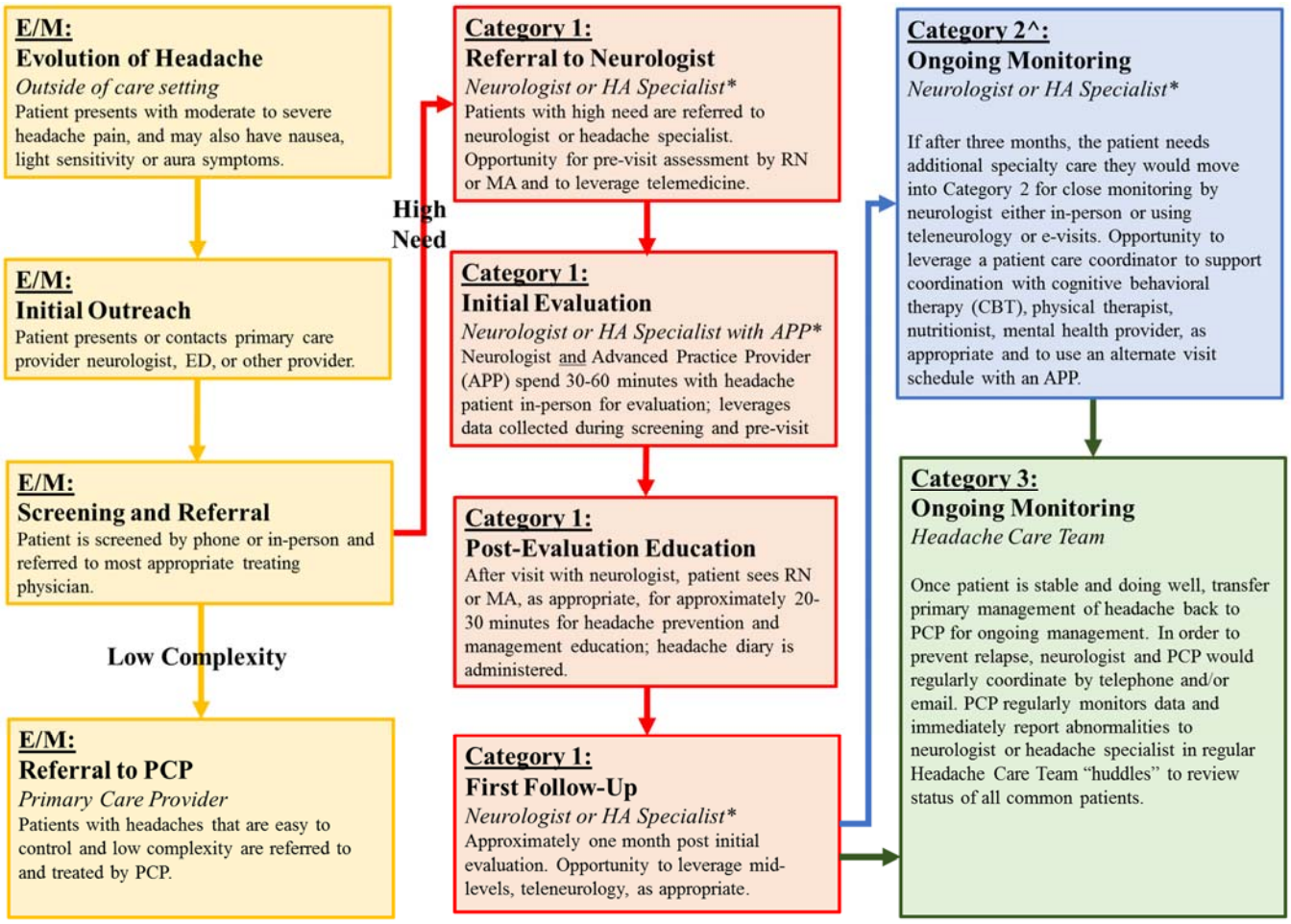
[6] Al-Hashel JY, Samar FA, Raed A, et al. Migraine misdiagnosis as sinusitis, a delay that can last for many years. *The Journal of Headache and Pain.* 2013; 14:97. Available at https://thejournalofheadacheandpain.springeropen.com/articles/10.1186/1129-2377-14-97

[7] van Vilet JA, Eekers FJ, Haan J, et al. Features involved in the diagnostic delay of cluster headache. Journal of Neurology, Neurosurgery & Psychiatry 2003;74:1123-1125. Available at http://jnnp.bmj.com/content/74/8/1123

and each stage of headache care delivery. For reference, the ICD-10 included in the model are listed in **Appendix B.**

The boxes in red correspond to Category 1: Diagnosis and Initial Treatment for Undiagnosed, Difficult to Diagnose or Poorly Controlled Headache Disorders. The blue boxes correspond to Category 2: Continued Care for Difficult-to-manage Headaches and Their Associated Symptoms. The green corresponds to Category 3: Continued Care for Well-Controlled Headaches. The yellow boxes are outside of the PCHCP and are billed via FFS.

Figure 1: Care Delivery Model



Screening and Referral

As a condition of their preferred referral status (described further below), members of the Headache Care Team across all health care settings would be expected to use a validated screening tool such as MIDAS (see **Appendix C**) or the triage protocol (**see Appendix D**), either by phone or in-person to all patients who list headache as a primary or secondary reason for their visit. The triage protocol includes questions to determine which patients need highly specialized

headache care. These tools were designed to be quick and easy to administer by clinical staff by phone or in-person.

Low complexity patients would be referred to or remain with the primary care physician and paid for via traditional Medicare FFS. High need patients would be appropriately referred to the neurologist or headache specialist. After initial screening and referral, the patient would be offered the opportunity to enter the PCHCP model. The relationship between the PCP and neurologist or headache specialist would be explained as would the proposed care plan.

The model relies on active recruitment of patient participation. All patients must opt-in to the proposed care plan and model in order for physicians to receive the PCHCP. Patients must agree to adhere to the care plan, to receive all headache-related care from the neurologist or headache specialist, and opt-in to the model; those who do enter Category 1 of the model.

Patient Flow

In Category 1, PCHCP would allow for a longer first visit that utilizes physician time and resources more efficiently. The initial visit may involve a 20-30-minute pre-assessment with the staff medical assistant (MA) or registered nurse (RN) to ensure that the neurologist or headache specialist has the information needed to make an accurate diagnosis during the patient visit. The patient would then meet in-person with their physician for approximately 30-60 minutes. After the initial evaluation, the patient would meet for 20-30 minutes with the MA or RN to learn headache prevention techniques and review the headache diary (See **Appendix E** for a sample template) and reinforce treatment plans.

After the initial visit, the patient would have in-person follow-up appointments as part of Category 1, based on patient need and headache severity. If the patient is doing well after three months in Category 1, they then transition directly into Category 3.

If the patient does not respond well after three months in Category 1, then the patient would enter Category 2 of the model, wherein the patient would have regular visits and/or e-visits to review headache diary data and assess necessary changes to medication or treatment. The neurologist or headache specialist would monitor patient reported data, submitted to a patient portal, which would allow for early intervention by the neurologist or headache specialist. As part of the APM, physicians would not have to rely on costly and inefficient face-to-face visits, but rather could leverage other means to check in with patients, including teleneurology. This would maximize physician time and limit unnecessary patient travel, thus supporting a potentially more positive patient experience as well as improving access to care in areas where there are neurology shortages.

Once doing well, the patient will transition from Category 2 into Category 3. In this Category, the PCP resumes ongoing management of headache symptoms. The neurologist or headache specialist, supported by add-on payments, would continue to monitor the patient's data and confer regularly with the PCP to ensure that patient stability is maintained.

Provider Roles

In Categories 1 & 2 neurologists or headache specialists will lead headache care, focusing their time on complex and difficult to manage patients who require additional expertise. High need

patients but otherwise stable patients would move into Category 3 where they would be primarily cared for by the PCP. The neurologist or headache specialist on the Headache Care Team could continue to provide oversight for these patients. In this way, the neurologist or headache specialist is engaged with the patient appropriately based on their complexity and needs.

It is the goal of the model to move all patients towards or into Category 3 (Continued Care for Patients with Well-Controlled Headaches) where they would receive care from a PCP with ongoing monitoring and support from the neurologist or headache specialist. In this category, PCHCP would provide supplemental payments in addition to E/M payments to enable the delivery of Health IT-enabled services such as electronic communication to support coordination between PCPs and specialists and tele-neurology to monitor high need but otherwise stable patients as well as a patient care coordinator to support ongoing patient monitoring.

Across all categories, the neurologist or headache specialist will coordinate with PCPs and other treating providers and monitor data such as patient assessments, laboratory results, imaging, and patient-provided data (e.g., the headache diary) for irregularities to intervene as needed.

Payment and Stratification

As above, because patients with different characteristics will need different types and amounts of services, providers would stratify patients using a validated screening tool or the triage protocol to determine the intensity of internal resources necessary to treat a patient. Similarly, payments would be adjusted based on specific patient characteristics such as frequency, headache severity (measured using MIDAS), select comorbidities, patient demographic information, and resource use.

The basic PCHCP system is designed to be flexible for both physician practices and payers. The physician practice would bill one of a new series of service codes instead of or in addition to billing traditional E/M codes, depending on model phase, each of which will be assigned a distinct mutually determined value. In return for these new and supplemental payments, the physicians would take accountability for controlling the cost and quality of the headache-related care their patients receive.

Physician practices and health systems that were willing and able to do so could accept larger "bundled" versions of PCHCP for the first two categories of payment. Instead of a monthly payment that is designed only to cover the clinical services directly delivered by the physician managing the patient's care, these optional bundled payments would include the funds to pay for some or all other headache services. These bundled payments would give the physician practice greater flexibility to redesign care delivery, but they would also require the physician practice to take greater accountability for managing utilization and spending. The AAN does not wish to pressure practices to assume comprehensive bundles at the onset of the project, but expects that down the line, as practices become comfortable with participation, that they will assume more financial risk.

The model would yield cost savings by enabling accurate and timely diagnosis, proper use of preventive treatments, reduced use of opioids and other inappropriate prescription medications, and better stewardship of resources.

1. **Scope of Model**
   - There are no CMMI APMs that are designed for neurologists or the conditions they treat; CCM payments are not sufficient to accomplish the goals of the PCHCP.
   - Enabled by the PCHCP, a wide range of physicians and other providers including but not limited to neurologists, headache specialists, PCPs, patient care coordinators, social workers, nutritionists, physical therapists, mental health providers, and/or pharmacists would participate in this model.
   - Between 6 and 7 percent of Medicare-eligible adults suffer from migraines.
   - Complex headaches are frequently misdiagnosed or unrecognized for years.
   - Neurologists and headache specialists are critical to ensuring accurate and timely complex headache diagnoses, but neurology shortages mean headache patients may experience long wait times and more difficulty finding a neurologist.[8]
   - A group of 12 practice administrators belonging to the AAN have reviewed the APM and expressed interest in implementing once funding is secured.

Medicare beneficiaries frequently visit their health care providers for headache treatment. In 2014, there were nearly 3.5 million patient visits for headache among those patients eligible for and enrolled in Medicare.[9] The median cost for a patient visit was more than $4,000 across all settings.[10] In the same year, Medicare paid an average of nearly $1,500 for prescriptions per patient visit with primary diagnosis of headache or migraine (excluding zero-payments).[11]

Headache is also a common reason for emergency department (ED) visits and hospitalizations. In 2014, more than 2 million patients covered by Medicare visited an ED for headache treatment. This is troubling, as research suggests that headache sufferers who present in EDs are often more difficult, and therefore costlier, to treat.[12]

Evidence shows that there are major gaps in the provision of preventive medicine for headache care. Epidemiologic studies suggest approximately 40 percent of migraineurs would benefit from preventive therapy, but only between 3 and 13 percent currently use it.[13]

Neurologists and headache specialists are critical to ensuring accurate and timely complex headache diagnoses, but neurology shortages mean headache patients may experience long wait times and more difficulty finding a neurologist.[14] The relatively high prevalence of headache in Medicare patients, ED utilization, gaps in preventive care, and issues of access suggest a need to

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[8] Dall TM, Storm MV, Chakrabarti R, et al. Supply and demand analysis of the current and future US neurology workforce. *Neurology.* 2013;1526-632x. Available at http://www.neurology.org/content/early/2013/04/17/WNL.0b013e318294b1cf.short

[9] MEPS 2014 Consolidated Conditions

[10] Ibid.

[11] Ibid.

[12] Ibid.

[13] Lipton RB, Bigal ME, Diamond M, Freitag F, Reed ML, Stewart WF; The American Migraine Prevalence and Prevention Advisory Group. Migraine prevalence, disease burden, and the need for preventive therapy. *Neurology* 2007; 68:343–349.

[14] Dall TM, Storm MV, Chakrabarti R, et al. Supply and demand analysis of the current and future US neurology workforce. *Neurology.* 2013;1526-632x. Available at http://www.neurology.org/content/early/2013/04/17/WNL.0b013e318294b1cf.short

deliver more efficient, effective care. However, there is no CMMI APM currently available to address these patients.

Participants in the PCHCP would have the incentive via enhanced payments or their preferred referral relationships to form preferred referral networks, or Headache Care Teams, which may be made up of a PCP, headache specialist and/or neurologist, and, as indicated by the patient's comorbidities, a patient care coordinator, social worker, nutritionist, physical therapist, mental health provider, or pharmacist. The neurologist or headache specialist on the team would manage care and provide oversight to other members of the team. The potential for better clinical care is high and the risk for deterioration of care is low based on the payment incentive to efficiently diagnose and treat, coupled with the quality financial metrics that will be monitored.

Specialists are currently limited in their ability to continue monitoring patients that are not in their immediate charge. The Chronic Care Management code (CCM) requires significant documentation and may only be claimed by one qualified health professional (QHP) per month, and it does not support all of the activities proposed for Category 3. PCHCP would provide supplemental payments in addition to E/M payments to enable the delivery of Health IT-enabled services such as electronic communication to support coordination between PCPs and specialists and tele-neurology to monitor high need (selected former Category 1 or 2) but otherwise stable patients as well as a patient care coordinator to support ongoing patient monitoring.

For their increased accountability and overall management of patients in the PCHCP, payments would be made to the neurologist or headache specialist on the Headache Care Team. Other providers on the Headache Care Teams who screen and refer patients, share notes, and be available for team calls to review patient data would have preferred provider status. HCT members refer their patients within the HCT, incentivizing providers to participate in order to be within the preferred network. As such, patients could enter the model from distinct care settings such as the PCP or neurologist's office. These providers could be housed in the same delivery system, or, enabled by the PCHCP, these providers could form "virtual teams" across practices.

This model will be attractive to small practices, an area that is a key AAN focus, as the enhanced payments will allow these practices to maximize their limited resources and better plan for expenses and allocate resources because the payment is up-front. The AAN already prioritizes enrolling small and solo practices in its Axon Registry (see **Appendix F**), and will provide technical and other support to minimize implementation costs and downward risk.

Similarly, when asked for input from the Headache Section of the AAN, neurologists ranging from small to large academic departments stated that this payment model would be feasible and attractive to them.

As mentioned above, up to 7 percent of Medicare beneficiaries, and as many as 20 percent of those 18 to 44 experience migraine or severe headaches[15], suggesting an opportunity for this model to succeed in commercial populations and benefit non-Medicare patients treated by those participating in the model. Since practices do best when they practice consistently across all patients and since the investment in the Headache Care Coordinator can be shared with

[15] Pleis JR, Ward BW, Lucas JW. Summary health statistics for U.S. adults: National Health Interview Survey, 2009 (provisional report). Vital Health Stat 2010;10(249). Available at http://www.cdc.gov/nchs/data/series/sr_10/sr10_249.pdf

Medicaid, CHIP, TRICARE/VA and private health patients, we are comfortable that the spillover effects can be substantial.

2. Quality and Cost

The PCHCP would improve the quality and cost of headache care by

- providing payments so that the neurologist or headache care specialist has sufficient time for accurate diagnosis;
- ensuring that patients are seen by the *right* provider based on their symptoms:
    - **neurologists or headache specialists** would see high-need patients whose headaches are *generally* difficult to control;
    - **PCPs** would see patients with highly complex headaches that are well-controlled (Category 3) or patients with low complexity headaches (Medicare FFS);
- utilizing Advanced Practice Providers (APPs), patient care coordinators, or other qualified medical professionals and tele-neurology, when feasible and appropriate;
- measuring physician performance using AAN-developed, headache-specific quality measures and using performance on these to adjust monthly payment;
- leveraging the Axon Registry for collecting and reporting quality measures, conducting quality improvement activities, and estimating total cost of care.

As indicated above, a major barrier to managing cost and quality of care for headache patients is insufficient time to establish an accurate diagnosis. Proper diagnosis of headache is overwhelmingly dependent on time spent gathering information while talking with the patient; it is supplemented by the physical exam. Ancillary testing such as imaging and laboratory testing contributes little information for the vast majority of headache types, but these tests are often inappropriately used by physicians who are unfamiliar with symptoms of complex headaches.

Currently, physicians and staff may spend 90-plus minutes face-to-face with a new complex headache patient during the initial visit to accurately assess the patient's condition, determine diagnosis, establish appropriate course of treatment, and educate the patient.[16] However, the highest level new patient E/M code available does not accurately reflect the intensity of services provided during these visits and only accounts for 60 minutes of time. Or, unable to treat the patient in the allotted 60 minutes, the physician may have the patient return several times, which is inconvenient to the patient and delays appropriate treatment. The PCHCP corrects this barrier by appropriately paying for diagnostic time, allowing the treating physician to have sufficient time with the headache sufferer to make the correct diagnosis the first time a patient presents.

Please see **Appendix G** for a hypothetical example of cost savings from one practice implementing the model.

Quality Metrics

The PCHCP is aimed at improving outcomes for patients and controlling costs for payers and patients by ensuring accurate and efficient diagnosis, appropriate, cost-effective treatment, prevention of future costs as well as resolution of the barriers presented by the current fee-for-

[16] Per a consensus of neurology experts at the AAN.

service model of delivering care. Additionally, in all categories, the neurologist or headache specialist will be required to maintain or improve quality as measured by the metrics detailed in Tables 1 and 2 below.

Table 1: Utilization and Spending Measures by Payment Category

Service Utilization and Spending[1]	
Payment Categories	**Measures**
Categories 1 & 2	• **Axon 22 MIPS 419** Headache- advanced brain imaging NOT ordered.[2] • Average per-patient spending on headache-related medications.[2] • Average per-patient rates of visits to emergency departments for management of headaches. • Average per-patient rates of admission and duration of stay to the hospital for management of headaches.
Category 3	• Average per-patient per-month total spending on (1) E/M visits related to headaches, (2) the non-face-to-face billing codes defined in Section V-3-B, and (3) emergency department visits and urgent care center visits for headache.[2] • **Axon 22 MIPS 419** Headache- advanced brain imaging NOT ordered. [2] • Average per-patient spending on headache-related medications. [2]

[1] Patients would be excluded from the numerators and denominators of the measures if they failed to adhere to key aspects of the treatment plan; or they did not have affordable insurance coverage for their medications.
[2] Standardized prices would be used so that the physician is not penalized by differences in prices of services available to patients under their health insurance

Table 2: Care Quality and Outcome Measures by Payment Category

Care Quality and Outcomes[1]	
Payment Categories	**Measures**
Categories 1, 2 & 3	• Frequency, severity, and disability of headaches, and changes from the patient's baseline, using MIDAS • **Axon 13** Medication prescribed for acute migraine attack • **Axon 25** Overuse of barbiturate and opioids for primary headache disorders • **Axon 15 MIPS 435** Quality of life assessment for patients with primary headache disorder • Percent of patients rating access to providers and experience of care as "excellent" • **MIPS 431** Preventive Care Screening: Unhealthy Alcohol Use: Screening and Brief Counseling • **MIPS 134** Preventive Care and Screening: Screening for Clinical Depression and Follow-up Plan

[1] Patients would be excluded from the numerators and denominators of the measures if they failed to adhere to key aspects of the treatment plan; or they did not have affordable insurance coverage for their medications.

The PCHCP model will continue to leverage expertise, guidelines and measures from the AAN to develop innovative specialty-specific measures for inclusion in the model and to retire and

replace topped out measures if and when they no longer meaningfully measure areas that require improvement.
Under the first two categories of the PCHCP model, clinicians are incentivized to contain their costs to below the fixed payments they receive, which in turn encourages timely and accurate diagnosis and care coordination as well as the appropriate use of medications and other interventions to reduce headache incidence as well as population health management. Moreover, the model adjusts payment based on performance on select quality metrics, comparable to those included in the Merit-based Incentive Payment System (MIPS), that are linked to utilization and spending as well as patient experience and health outcomes (described further in Section 3: Payment Methodology).

Several of the quality metrics are currently included in the AAN's Axon Registry, which is available for free for all AAN members. Access to this tool would allow for ease of data collection and reporting and could support quality improvement.

Innovations to Reduce Cost

To improve costs and maintain quality, participants in this model will be encouraged to leverage Advanced Practice Providers (APPs)[17] and teleneurology for ongoing management of established patients as a way to reduce cost of care and maintain quality.

i. Advanced Practice Providers and Other Appropriate Staff

The AAN APP workgroup suggests incorporating APPs[18] in the initial Category 1 visit to introduce the care team concept to the patient and become familiar with the patients' conditions, when feasible. APPs could then perform the one month follow-up to the initial visit.

In order to support cost savings, the neurologist or headache specialist's office may employ an alternate visit schedule with APPs for Category 2. Patients will visit their specialist's office regularly, but only see the neurologist or headache specialist every third visit. Between visits, APPs could regularly monitor patient-reported data such as the headache diary in collaboration with the specialist on the team to identify irregularities and needed interventions. Similar alternate visit schedules have been employed by innovative neurology practices nationwide, such as DENT Neurologic Institute, to reduce costs and improve quality.

In Category 3, ongoing management could be supported by an APP within a neurology practice, rather than a PCP, in collaboration with the neurologist or headache specialist.

ii. Teleneurology

The PCHCP would also incentivize maximization of new technologies such as teleneurology to administer headache care. Due to limitations in reimbursement, and despite evidence showing

[17] Advanced Practice Providers (APPs) are non-physician members of the care team, including Nurse Practitioners (NPs), Physicians Assistants (PAs), Certified Nurse Midwives, Clinical Psychologists, Nonclinical Psychologists, Clinical Nurse Specialists. See: https://www.aan.com/uploadedFiles/Website_Library_Assets/Documents/3.Practice_Management/2.Quality_Improvement/14%20APP%20Case%20Study%20v102-6.pdf

[18] Note: we will use the term APPs, but include other qualitied medical professionals and clinical staff who are part of the Headache Care Team.

similar quality, teleneurology is not widely used in non-emergent or outpatient setting. The AAN's panel of expert neurologists agreed that the initial visit, which requires detailed history taking and examination, may not be well-suited for remote consults. However, subsequent visits, particularly once a patient is in a stable condition, could easily be facilitated by remote monitoring equipment.[19] As teleneurology evolves, initial visits may also be conducted via teleneurology.

In Categories 2 and 3, patients could be seen remotely via phone or video to review headache diaries and treatment questions. This model would allow providers to see more patients in a given day and enable improved access for those who live in rural areas or who may not be mobile, as patients could "see" their provider from anywhere.

For teleneurology to be successful, someone from the neurologist's office (e.g., a patient care coordinator) would need to touch base with the patient periodically via phone or secure message to remind patients to complete and submit their headache diary. The neurologist or APP would review and adjust treatment as needed based on diary entries.

The incentives of this model will ensure that neurologists and headache specialists are seeing the patients who most need their care. By leveraging the skills of APPs, patient care coordinators, RNs, and PCPs in managing stable headache patients and using teleneurology to administer ongoing treatment, this model will reduce costs to payers and reduce burnout and scarcity among neurologists, whose patient lists often include those who may be better seen in a primary care setting.

This model has not been implemented to-date, so it is not possible to estimate the extent to which costs will be reduced or to predict the nature and magnitude of barriers and risks to the model's success. However, the AAN has identified at least 12 neurology practices eager to implement this payment model and has secured commitment from the Health Services Research Subcommittee at the AAN to estimate the impact of the model on cost and quality of care once implemented. Moreover, though an inherent barrier to this model is the high financial and personnel cost of developing the infrastructure to support the intense coordination of care proposed, the AAN is committed to providing technical assistance to all participants in addition to access to the Axon registry, which can support quality improvement activities.

3. Payment Methodology

- The basic model provides flexible fixed payments or add-on payments depending on the category of the model. Monthly payments should be greater than the current average E/M payment for headache care.
- Each category would be stratified into different payment levels based on patient severity, measured using validated tools, and demographic information.
- Payments would be adjusted based on performance on quality metrics listed in Tables 1 & 2.
- Undervaluation of the model would result in inadequate model infrastructure and limit physician participation; AAN staff is prepared to provide technical assistance, quality

[19]Muller KI, Alstadhaug KB, and Bekkelund, SI. A randomized trial of telemedicine efficacy and safety for nonacute headaches.*Neurology.* 2017.
http://www.neurology.org/content/early/2017/06/14/WNL.0000000000004085

improvement support, and access to the Axon Registry to offset early implementation costs.

We propose a continuum of graduated flexible monthly payments starting with a Basic Bundle that would allow physicians with less experience in APMs to become familiar with emerging models of care continuing up to a population-based bundle to accommodate those physicians with more experience and resources to pursue new models of care.

See Table 3 for a high-level overview of the proposed APM options.

Table 3: Continuum of Payment Options

APM Option	Included Services
Basic Bundle (BB)	• E/M services for headache-related care • Separate payment for other headache-related services (i.e., lab tests, imaging studies, medications, etc.) but physician is accountable for utilization via QMs
Option A	• Basic Bundle, **PLUS** • All frequently used tests and imaging studies.
Option B	• Basic Bundle, **PLUS** • Headache Medication • Physician Services[20] • Testing/Imaging
Option C	• All headache services needed during month
Option D	• Manage headache-related care of all individuals with headache diagnosis in defined population (i.e., ACO)

The AAN anticipates that in the initial years of program implementation, most physicians will elect the Basic Bundle and therefore focus our proposal on this category. Descriptions of the Options A-D can be found in **Appendix H.**

Patient Categories for APM

Patients with headaches differ significantly in the types, frequency, and severity of headaches, the level of disability the headaches create, and the ability of available therapies to control their headaches.

For each category of payment, the neurologist or headache specialist would receive a predetermined, fixed payment *per patient* to support all the *headache-related clinical services* defined in Table 4 below.

To provide the right type of care that patients with headaches need, the Basic Bundle (BB) would be divided into three categories:

[20] Physician services include costs of care associated with biofeedback, acupuncture, psychological/psychiatric management, dietician, chiropractic manipulation, and physical therapy.

BB Category 1: Diagnosis and Initial Treatment for Undiagnosed, Difficult to Diagnose or Poorly Controlled Headache Disorders.

This category includes any patient who:

- Has been experiencing severe, frequent, or disabling headaches that have not been diagnosed or treated by a physician;
- Has received treatment from a different physician practice that has not been successful in controlling the severity, frequency, or disability of headaches, or where the treatment used to control the headaches requires large amounts of acute headache medications, or who requires use of medications that require special expertise or result in problematic side effects; or
- Has a change in frequency, severity, characteristics, disability, or associated features of their headaches, has a new type of headache, or has experienced a change in another medical condition that requires modification of the existing headache treatment plan.

BB Category 2: Continued Care for Difficult-to-manage Headaches and Their Associated Symptoms.

This category includes any patient who:

- Has 10+ headache days per month which adequately respond to symptomatic/abortive therapy; or
- Has 3+ headache days per month with poor response to symptomatic/abortive therapy; or
- Has 1-2 severe/disabling headache days per month with poor response to symptomatic/abortive therapy; or
- Requires close monitoring of the disorder or the medications used to treat it; or
- Has intractable migraine or status migraine requiring intravenous or injected medication treatment during the month
- Has chronic daily headaches with medication overuse
- Has other complex headache disorders

BB Category 3: Continued Care for Well-Controlled Headaches

This category includes any patient who:

- Has been diagnosed with a primary headache disorder, experiences fewer than 10 headache days per month, and the headaches respond adequately to prescribed acute therapy.

Table 4: Payment Structure and Included Services

Category	Payment Type	Performance Period	Included Services
Category 1: Diagnosis and Initial Treatment for Undiagnosed, Difficult to Diagnose or Poorly Controlled Headache Disorders	**One-time payment**	3-month period	• Determination of a diagnosis of the type of headaches the patient is experiencing; • Ordering appropriate studies for the headache diagnosis and as a baseline before headache treatment begins; • Engaging in a shared decision-making process with patients regarding treatment options; • Developing a treatment plan for the diagnosed headaches in cooperation with other physicians who are providing care for the patient's other health care needs, or in cooperation with other physicians who will be treating another health condition which is the primary cause of the headaches; • Provision of patient education regarding the treatment plan; and • Supervision of the implementation of the treatment plan for three months.
Category 2: Continued Care for Difficult-to-manage Headaches and Their Associated Symptoms.	**Monthly payment**	Monthly for six months, subject to renewal based on need.	• Supervision of the patient's treatment • Evaluation of changes in the patient's headache frequency or severity or associated symptoms • Evaluation of changes in medications, side effects, or results of monitoring such as laboratory or cardiac evaluation revisions to the patient's treatment plan as necessary • Patient education and supervision of use of preventive medications for patients overusing acute medication or for patients using high levels of medications for acute symptoms.
Category 3: Continued Care for Well-Controlled Headaches[21]	**Add-on service**	Monthly for a year, subject to renewal based on need.	• Non-face-to-face visits (e.g., telephone or e-mail consultations with patients or other physicians providing headache care) to ensure rapid and effective response to patient problems and to enable coordination of headache care with care for the patient's other conditions.

[21] A patient diagnosed with a secondary headache disorder would not be included in this model.

Payments should be greater than the average E/M payment for office visits for headache care. Since the model intentionally seeks to include higher complexity patients, payments would need to be commensurate with the additional care needed to adequately treat these populations. The actual value of the payment would need to be mutually determined by participants and CMS.

Note that the PCHCP model would only replace E/M payments for office visits ***related to headache care.*** If a patient with headaches visits their health care provider for an unrelated neurological issue or for a health problem other than headache, those visits would still be paid for separately.

Other headache-related services—laboratory tests and imaging studies, medications, hospitalizations, etc.—that are received by the patient during the month covered by the payment would be paid separately, but the neurologist or headache specialist would be accountable for utilization and/or spending on those services using the measures described above in **Quality and Cost.** Neurologists or headache specialists and their patients would be exempt from any prior authorization requirements for ordering tests or medications.

This model could include other payers in addition to Medicare. While the payment amounts for each category would vary by payer, it is anticipated that the methodology for arriving at the payment would be standard across payers.

Adjustment of Payment Based on Patient Characteristics

As noted throughout, individuals with headache differ significantly in the types, frequency, severity, and disability of headaches they experience, and they differ in terms of the other health problems they have besides headaches. These factors can affect three things:

- The amount of time or resources that the physician practice(s) receiving the payment would need to spend in supervising the treatment of the patient
- The number, type, or cost of testing, imaging, drugs, and other services that the patient would need; and
- The outcomes, such as reductions in headache frequency, severity, and disability, medication side effects, etc. that would be achievable for the patients based on current treatments that are available.

To address this, payment amounts and performance measures for each payment category would be adjusted to reflect the cost of treating more complex patients. We propose payment adjustments based on a tool, such as a MIDAS score, or headache characteristics, and select comorbidities. Each level will be assigned its own billing code and correspond to a different payment amount.

We have identified the following levels within each payment category:

Category 1: Payment and Performance Subcategories for Diagnosis and Initial Treatment Undiagnosed, Difficult to Diagnose or Poorly Controlled Headache Disorders

Subcategory	Headache Characteristics[22]	Clinical Examples
Level 1	1–2 headache days per month OR 3+ headache days per month if the diagnosis is a secondary headache disorder OR MIDAS score 6-10	• 70-year-old female with two throbbing headaches per month; sometimes relieved with ibuprofen or acetaminophen/aspirin/caffeine. Has never been on triptans or other specific migraine medication.
Level 2	3–14 headache days per month OR 1 or more severe/disabling headache days per month OR MIDAS score 11-20	• 66-year-old male with one headache per month with photophobia and nausea lasting 3 hours, during which he is confined to bed. • An established female patient with migraine having frequent, intermittent, and moderate to severe headaches with nausea and vomiting. Headaches usually controlled with triptans/ antiemetic medication, but have increased in frequency/severity and are less responsive to abortive therapy. Occasionally results in visit to the ED.
Level 3	15+ headache days per month OR 1 or more severe/disabling headache days per month and designated comorbidities OR 3–14 headache days per month and designated comorbidities OR Other complex headache disorders[23] OR MIDAS score 21+	• 45-year-old female with history of depression, anxiety, opioid use, has HA most days, all day, taking acetaminophen 4/day, sumatriptan daily • 72-year-old male with long history of "Tension Headaches." The headaches are throbbing and sometimes associated with nausea and photophobia. Ibuprofen occasionally lessens symptoms. Following a motor vehicle accident, headaches are now disabling and require bed rest.

[22] The model does not specifically stratify for patient characteristics, however patient demographic and socio-economic status information is reflected in headache characteristics. For example, women are more likely to suffer from Level 3 headaches than men. See: http://www.neurology.org/content/88/24/2268

Category 2: Payment and Performance Subcategories for Continued Care of Difficult-to-manage Headaches and Their Associated Symptoms

Subcategory	Headache Characteristics[24]	Clinical Examples
Level 1	10+ headache days per month with adequate response to symptomatic/abortive therapy, and no designated comorbidities requiring coordination of treatment OR MIDAS score 6-10	• 68-year-old presented 3 months ago with CDH, weaned off of daily symptomatic OTC meds, started on amitriptyline, and introduced life-style modifications with modest improvement. Plan to wean off of amitriptyline and add topiramate.
Level 2	3–14 headache days per month with poor response to symptomatic/abortive therapy OR 1–2 severe/disabling headache and/or migraine aura or associated symptom days per month with poor response to acute therapy OR 3+ headache and/or migraine aura or associated symptom days per month with adequate response to symptomatic/abortive therapy but designated comorbidities affecting treatment OR MIDAS score 11-20	• 28-year-old female did not tolerate propranolol, started on topiramate, but still with 1 day in bed per week with throbbing HA, nausea and vomiting • 50-year-old male with severe, excruciating, unilateral, orbital and supraorbital pain lasting 15 minutes to 3 hours, occurring 3 or 4 times a day. Associated symptoms include lacrimation, nasal congestion, rhinorrhea, and conjunctival injection, restlessness and pacing. Oral triptans and analgesics have not relieved the pain.
Level 3	15+ headache and/or migraine aura or associated symptom days per month with poor response to acute therapy OR 3+ severe/disabling headache and/or migraine aura or associated symptom days per month	• 45 -year-old female with CDH, unable to work because of the headaches. Currently on therapeutic doses of topiramate. Has been on multiple prophylactic and abortive medications without benefit.

[24] These may include chronic migraine (CM), New Daily Persistent Headache (NDPH), medication overuse headache, hemiplegic migraine, basilar type migraine, Trigeminal Autonomic Cephalalgias (TAC) syndrome, cranial neuralgias, or secondary headache.

	with poor response to acute treatment OR MIDAS score 21+	
Level 4	Intractable migraine or status migraine requiring intravenous or injected medication treatment during the month.	• 69 -year-old male with history of classic migraine, does not tolerate triptans, has 1–2 severe headaches per month lasting 12–18 hours associated with prolonged nausea and vomiting.
Level 5	Complex migraine disorders such as chronic daily headaches with medication overuse, hemiplegic migraine, basilar-type migraine, etc.	• 50 -year-old overweight female with long history of CDH, diffuse muscle pain, fatigue taking ibuprofen 3x/day, sumatriptan 2 x/day, and acetaminophen/butalbital/caffeine 3x/day • 30 -year-old male, aura of right sided-weakness and word confusion lasting 20 minutes followed by HA, similar to description of father's own episodes.

Category 3: Continued Care for Well-Controlled Headaches

Subcategory	**Headache Characteristics**	**Clinical Examples**
Level 1	Patient reports missing two days of work in the last month.	• 65-year-old female usually with 2 migraines/month, responsive to sumatriptan, noted 4 last month.
Level 2	Headache is generally controlled but there is a change in headache frequency. OR Patient has experienced an unusually severe headache or has other clinical questions.	• Psychiatrist emailed regarding patient with history of migraines and depression, who has been doing well, as wishes to add an SSRI. • Call from ED as patient there with severe HA, first bad one in 8 months.

Adjustment of Payment Based on Performance

During the first two years of the program, participants would receive feedback reports from CMS with details of their performance on the selected quality measures. These would serve to inform practices of opportunities for quality improvement and notify them of potential adjustments in coming years.

Starting in the third year of implementation, participants in the model would see their monthly payment adjusted based on their performance on the quality metrics presented in Tables 1 and 2 above in the previous year.

Performance on the quality/outcomes measures could be determined by comparing the neurologist or headache specialist's performance to the average performance of all neurologists or headache specialists receiving the payment during the prior performance year for each category of patients.

The physician or team of physicians participating in the PCHCP would receive the default payment level provided their performance during the most recent measurement period if their performance was "good" on all measures, as described in Table 5 below. The payment would be increased if all measures were "good" and some were "high," and the payment would be reduced if some measures were "low." The maximum increases and decreases would initially be ±4 percent and then would increase over time to ±9 percent.

Table 5: Quality Adjustments in Year 3[25]

Quality Designation[26]	**Percentile**	**PCHCP Adjustment Factor**
High	76% - 100%	+4%
Good	26-75%	No adjustment.
Low	0-25%	-4%

CMS, upon receiving the claim, will determine the standard payment amount and adjust the payment by the performance adjustment factor for that practice that is determined using the methodology described above.

In general, the performance adjustment factor would be established on an annual basis based on the practice's performance in the prior year. As the model matures, larger practices could potentially have their performance adjustment factors updated more frequently (e.g., semiannually or quarterly), whereas small practices could have their performance measured over a longer period of time (e.g., two years) in order to have more reliable measures with smaller numbers of patients.

Setting Payment Amounts

A default payment amount would be established between the neurologist or headache specialist and CMS for each category of patients. These payment amounts would be defined in advance,

[25] Note, this table models an example of adjustments; actual gradations to be modeled once payment amount has been mutually determined.
[26] The AAN is prepared to work with CMS and other payers to define "high," "good," and "low" for the model.

similar to a standard fee schedule, so that physicians would know what they would be paid for delivering the defined services to patients meeting the characteristics for a particular severity stratum within that category.

The payment methodology hinges on mutual determination of package pricing involving both Medicare and the model participants. The price point must be sufficient to cover the additional time spent with each headache patient but also produce cost savings to Medicare. The savings would be apparent when looking at the total cost of care for headache care, and not when comparing FF payments to the new bundled payment. Setting a price would involve reviewing claims from a baseline period for all Medicare beneficiaries who satisfy inclusion criteria, adjusting expenditures for geographic variation, and stratifying by risk-adjustment factors. The risk-adjusted price would then be reduced by a set discount percentage (which would be retained for performance adjustments) to generate a target price.

The model, if priced correctly, inherently avoids patient cherry picking in that it intentionally seeks and encourages providers, particularly neurologists and headache specialists, to see more difficult patients.

Consistent with the Oncology Care Model, when participants have insufficient cases in the baseline period to calculate reliable target prices, regional data may be leveraged to increase precision.

Allocation of Flexible Monthly Payment

For the purposes of payment, participants would indicate a single practice to receive payments on behalf of the Headache Care Team. If two or more physician practices (i.e., distinct Tax Identification Numbers or TIN) are working together as a Headache Care Team to manage patient care (e.g., a disparate headache specialist and neurology practice), then the two practices would be permitted to determine how the Patient-centered Headache Care Payments would be divided between them.[27]

Resolving Barriers in Current Fee-For-Service Model

One of the key goals of this model is to support care delivery transformations by resolving barriers in the current fee-for-service model, which provide insufficient payments for time needed to accurately diagnose types of headaches, plan treatment in complex cases, dedicate time to patient counseling, review medication side effects, and encourage medication adherence.

Moreover, the current model does not provide payment for non-face-to-face contacts such as the proposed pre-assessment, phone calls or e-visits as well as delivery system innovations such as telemedicine or the coordination of care, which has proven benefits for supporting headache care.[28] Though the CCM code was created to support coordinated care, as stated above, it

[27] The practices could either agree that one practice will receive the payments and then make the allocations to the other practice(s), or the practices could form a separate corporate entity (e.g., a limited liability company) controlled by the participating practices and the payer would make the payments to that entity.

[28] Muller KI, Alstadhaug KB, and Bekkelund, SI. A randomized trial of telemedicine efficacy and safety for nonacute headaches.*Neurology.* 2017. http://www.neurology.org/content/early/2017/06/14/WNL.0000000000004085 .

requires burdensome documentation and may only be claimed by one QHP per month, limiting the ability to deliver the team-based care proposed.

The PCHCP model could support all of these activities as well as other high-value services such as, non-physician services, a patient care coordinator, and non-medication therapies. It would allow the neurologist, headache specialist, care coordinator, and PCP to coordinate by phone and email communications across entities, to co-manage patients, and facilitate accurate diagnosis of headaches. This would all have the effect of reducing redundant labs and imaging, and avoiding unnecessary office visits.

4. Value Over Volume

- The PCHCP is designed to empower physicians to deliver high-value, low-cost care.
- Physicians will have the flexibility to reallocate resources and reduce overall volume by considering their patient panel as a population, rather than on an individual basis.
- Each payment category is tied to performance on quality metrics related to service utilization as well as patient outcomes.

The PCHCP model emphasizes value over volume in its care delivery redesign. The model allows for additional time with a headache patient, encourages highly-coordinated, team-based care across multiple provider settings, maximizes use of APPs and patient care coordinators, and enables use of teleneurology for headache care. The PCHCP is designed to empower physicians to deliver high-value services, low-cost services such as phone calls to respond to patient problems and validated questionnaires and patient assessments to confirm diagnoses and appropriately allocate resources. These valuable services are underutilized because the current payment model does not support them.

Though some patients may require more intense resources and services, driving up volume, through the PCHCP, physicians will have the flexibility to reallocate resources and reduce overall volume by considering their patient panel as a population, rather than on an individual basis, and still be able to provide individuals care plans.

Additionally, as described above, each payment category is tied to quality metrics related to service utilization as well as outcomes. The quality measures selected encourage physicians to confirm that necessary psychological and social assessments are administered, control costs, and reduce unnecessary imaging. Those who perform in the lowest quartile on the quality measures listed in Tables 1 and 2 will see their payments reduced accordingly, thereby incentivizing participating clinicians to work collaboratively to reduce unnecessary spending and promote high-quality care. Moreover, patients must opt-in to the model; they are not attributed. Active enrollment serves as a de facto requirement for quality as patients will not enroll in a model that does not demonstrate better quality than the status quo.

5. Flexibility

- Practices will have the flexibility in determining how to reinvest the payments into the PCHCP model.
- Physicians can choose their level of participation: from the Basic Bundle, all the way through population-based payment.

This model is intended not be prescriptive, but rather menu-driven. Payments should be sufficient to accommodate practices in all sizes and settings (i.e., small and large, rural and

urban, academic and research). Practices will have the flexibility to use the payment within their own practice, or to collaborate with local practices to form Headache Care Teams. And, as noted throughout the proposal, the PCHCP would grant physicians the flexibility to use payments to support high-value practice activities such as adequate face-to-face time, phone calls, email correspondence with patients and other physicians, patient education, teleneurology and care coordination, all of which are not currently permitted or adequately supported with E/M services payments.

Physicians will have flexibility to use the payment as they deem fit to support the goals of the model as well as in determining their phase of participation. In Table 3 the proposal details the different phases of participation. The model ranges from simply including E/M services to a population-based payment for headache care that institutes a condition-based payment to manage the headache care of all individuals with diagnosed headache in a broader, pre-defined population. This would allow physicians in small practices, rural providers, and those who otherwise lack resources or have not yet been exposed to APMs to have access to payment reform initiatives and begin to engage in care delivery reform while creating opportunities for larger or more advanced neurology groups to pursue models that call for greater accountability.

Implementing the model may result in new operational burdens for providers who will need to learn new codes, determine how to consistently incorporate MIDAS into their workflow and EHR, and ensure that necessary infrastructure such as staff training and EHRs are implemented. However, the AAN has committed to providing technical support throughout initial implementation to mitigate such operational burdens.

6. Ability to be Evaluated

- The model aims to reduce the number of and costs associated with unnecessary ED visits and hospitalization as well as costs associated with laboratory testing, imaging, and medications.
- Data from Medicare claims, the AAN's Axon Registry and practice EHRs would be used to evaluate the model.
- Qualitative metrics such as the patient experience and self-reported headache pain could also be examined.
- The AAN's Health Services Research Committee is committed to supporting the evaluation of this model.

The quality framework of the PCHCP model is like many CMMI payment demonstration projects, and make the model a strong candidate for evaluation. The measures proposed in Section 3 aim to reduce: (1) the number of and costs associated with unnecessary ED visits and hospitalizations: (2) costs associated with laboratory testing, imaging, and medications. The data to evaluate the degree to which PCHCP model achieves these goals could be obtained from existing sources, such as Medicare claims, the AAN's Axon Registry, which supports several of the quality metrics proposed, and practice EHRs.

Beyond the core metrics, this model is expected to improve qualitative metrics such as the patient-physician relationship by making the physician more accessible through technology and encouraging a high rate of patient engagement through the headache diary. The diary will also capture improvements in self-reported headache pain.

There have not been evaluations of the model to date, but the AAN's Health Services Research Committee has committed to supporting the evaluation of this model if funding and approval is secured to pursue its implementation. The evaluation will center on cost-effectiveness of the model and also compare quality, missed appointments, and treatment adherence in FFS vs. PCHCP patients.

7. Integration and Care Coordination

- The model is predicated on strong internal and/or referral networks of multi-specialty providers.
- The monthly payment supports the creation of a Headache Care Team and empowers neurologists to provide oversight for this team.
- Other members of the Team would be motivated to collaborate by the preferred referral status.

As described above, the model is predicated on a strong internal and/or referral network of providers that involves multiple types of physicians, non-physicians, and other eligible professionals, and it allows for the creation of a Headache Care Team, when feasible. PCPs can and should be involved upon a patient's admission to the PCHCP. Neurologists or headache specialists provide oversight for stable patients and manage direct treatment for the most complex patients. Patient care coordinators, nutritionists, physical therapists, social services, or mental health providers provide supplemental preventive care.

Through the monthly payment, neurologists and headache specialists will be empowered to provide Headache Care Team oversight. For other members of the team, maintaining preferred referral network status would serve as incentive to come together to review patient status and to share patient information. This same team follows a patient throughout their headache care treatment, with all members of the team actively monitoring the patient's data and conferring with other members of the team about irregularities, even when the patient is not in their immediate care.

The neurologists or headache specialists in the model are financially responsible for spending on laboratory testing and imaging, medications, ED visits, and hospitalizations. Physicians who do not serve in the same practice would have to develop strong relationships and contractual agreements with a multitude of providers, even those not on the Headache Care Team.

8. Patient Choice

- Patients must opt-in to the model.
- Though patient choice is somewhat restricted by the requirement that patients receive care from their Headache Care Team, the AAN anticipates the more personalized care experience will attract many headache sufferers to the model.

Patient choice is preserved from the outset of the PCHCP, as the payment model will not be implemented until the patient agrees to a care plan and designates their Headache Care Team. As indicated above, the neurologist or headache specialist would explain the relationship to the Headache Care Team as well as the proposed care plan during the initial visit. Patients who do not agree to the care plan may opt-out of the model entirely. Though patient choice is somewhat restricted by the requirement that patients receive their headache care from the Headache Care Team, patients are given the option to participate in the PCHCP model and may opt-out of participation altogether if they so choose.

Moreover, the expert neurologists who contributed to this model noted that headache sufferers, when engaged by their providers, are detail-oriented and active in their treatment. As such, the headache diary will serve to support patient satisfaction and health improvement. The AAN anticipates that the additional patient education, care coordination, and other resources, as well as more individualized attention from their provider, will make the model attractive to patients resulting in limited opt-outs.

9. Patient Safety

- The model promotes safety by supporting early, accurate diagnosis of headache and educating patients on appropriate preventive therapies.
- The model includes quality measure that aim to address and limit the improper use of opioids and barbiturates.
- Given the wide range of providers on the Headache Care Team, the model would result in more effective use of non-pharmacologic approaches to preventive headache care.

This model promotes patient safety by directing patients to the most appropriate provider, and ensuring that the most complex patients have sufficient time with their physicians to produce an accurate diagnosis and treatment plan when symptoms first present.

Individuals who suffer from headaches may be inappropriately prescribed or self-medicate with improper over-the-counter and prescription drugs when their diagnoses are incorrect or delayed. The model aims to limit this by preventing such mistakes and including several quality measures that address the use of opioids and barbiturates, both of which are often used in excess or incorrectly for the treatment of migraines and episodic tension-type headache. These measures support the public health and patient safety priorities of reducing the opioid epidemic and ensuring other preventive medicines are explored before higher-risk prescriptions are ordered.

Similarly, through team-based, coordinated-care, the model aims to limit progression from episodic to chronic migraine. Frequent migraines can alter the brain structure permanently. One study found that infarct-like abnormalities in the brain, which are symptoms that indicate a disruption in blood flow to the brain, increased by 44 percent in those who had migraines with aura compared with those who had migraines without aura.[29] By allowing physicians the time to accurately diagnosis a headache, and educating patients on proper preventive therapies and care plan, an appropriate diagnosis can be reached and brain alterations avoided.

The Headache Care Team may include non-physician providers such as patient care coordinators, nutritionists, physical therapists, as well as mental and social service providers, which would result in optimized use of non-pharmacologic approaches to preventive care and treatment.

10. Health Information Technology

- PCHCP would require participating clinical practice to have CEHRT.
- Those practices without EHRs may still be able to track performance on quality metrics using an AAN-developed Excel template.
- The model also supports teleneurology and use of the Axon Registry.

[29] Bashir, A, Lipton, RB, Ashina S, et al. Migraine and structural changes in the brain: A systematic review and meta-analysis. *Neurology*. 2013 Oct 1; 81(14): 1260–1268. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3795609/

Payment and accountability across multiple types of personnel and potentially multiple organizations would serve as an incentive to record and share information electronically. To achieve the aims of this care payment, all clinical practices participating in the PCHCP will require certified electronic health record technology (CEHRT) capable of producing reports to support quality metrics listed in Section 2b: Quality Metrics. For example, CEHRT would need to be able to discretely record and report the different types of headaches, the frequency and severity of headaches, current and historical class of headache medications, and the MIDAS score. The AAN will support practices without EHRs in tracking and exchanging patient information using Microsoft Excel spreadsheets and secure email. As part of the technical assistance, the AAN would create a template Excel sheet to track quality metrics.

The model also supports use of teleneurology to support patient visits for established headache care patients. Teleneurology has proven effective for managing costs while maintaining quality of care for headache patients. Software such as Updox may be used to support electronic interaction between EHRs, practices and patients.

Finally, all neurologist participants who belong to the AAN will have access to the Axon Registry, which connects to a practice's EHR to support data collection and reporting as well as internal quality improvement

Appendices

Appendix A: Patient Care Coordinator

The patient care coordinator is a necessary service for which Medicare does not currently reimburse, despite showing improved quality and value for other chronic conditions. For the Headache Care Team, the patient care coordinator may support patient intake, initial patient screening via call or email, reviewing and scoring initial screening forms, and triaging patients into the APM or usual care, appropriate. The patient care coordinator may also support periodic patient follow-up with questionnaires, headache diary monitoring, and referral tracking and management (e.g., nutritionist, mental health provider, or physical therapist follow-up.)

The neurologist or headache specialist on the Headache Care Team would supervise the patient care coordinator and provide support on difficult decisions or care. As the patient moves from Category 2 to Category 3 and into the PCPs care, the patient care coordinator would continue to monitor patient response. The PCC may make suggestions for care such medication changes based on protocol therapy, or based on recommendations by the neurologist, but the neurologist would be able to reduce face to face visits, thus reducing Medicare spending, other than at regular intervals. Incorporating a patient care coordinator would support the overall model goal of providing interdisciplinary care.

Appendix B: ICD-10 Codes for Model Inclusion

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 status 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

Appendix C: Validated Screeners

The Migraine Disability Assessment Test (MIDAS)

The **MIDAS** (Migraine Disability Assessment) questionnaire was put together to help you measure the impact your headaches have on your life. The information on this questionnaire is also helpful for your primary care provider to determine the level of pain and disability caused by your headaches and to find the best treatment for you.

INSTRUCTIONS

Please answer the following questions about ALL of the headaches you have had over the last 3 months. Select your answer in the box next to each question. Select zero if you did not have the activity in the last 3 months. Please take the completed form to your healthcare professional.

1. On how many days in the last 3 months did you miss work or school because of your headaches?

2. How many days in the last 3 months was your productivity at work or school reduced by half or more because of your headaches? (Do not include days you counted in question 1 where you missed work or school.)

3. On how many days in the last 3 months did you not do household work (such as housework, home repairs and maintenance, shopping, caring for children and relatives) because of your headaches?

4. How many days in the last 3 months was your productivity in household work reduced by half of more because of your headaches? (Do not include days you counted in question 3 where you did not do household work.)

5. On how many days in the last 3 months did you miss family, social or leisure activities because of your headaches?

Total (Questions 1-5) _____

What your Physician will need to know about your headache:

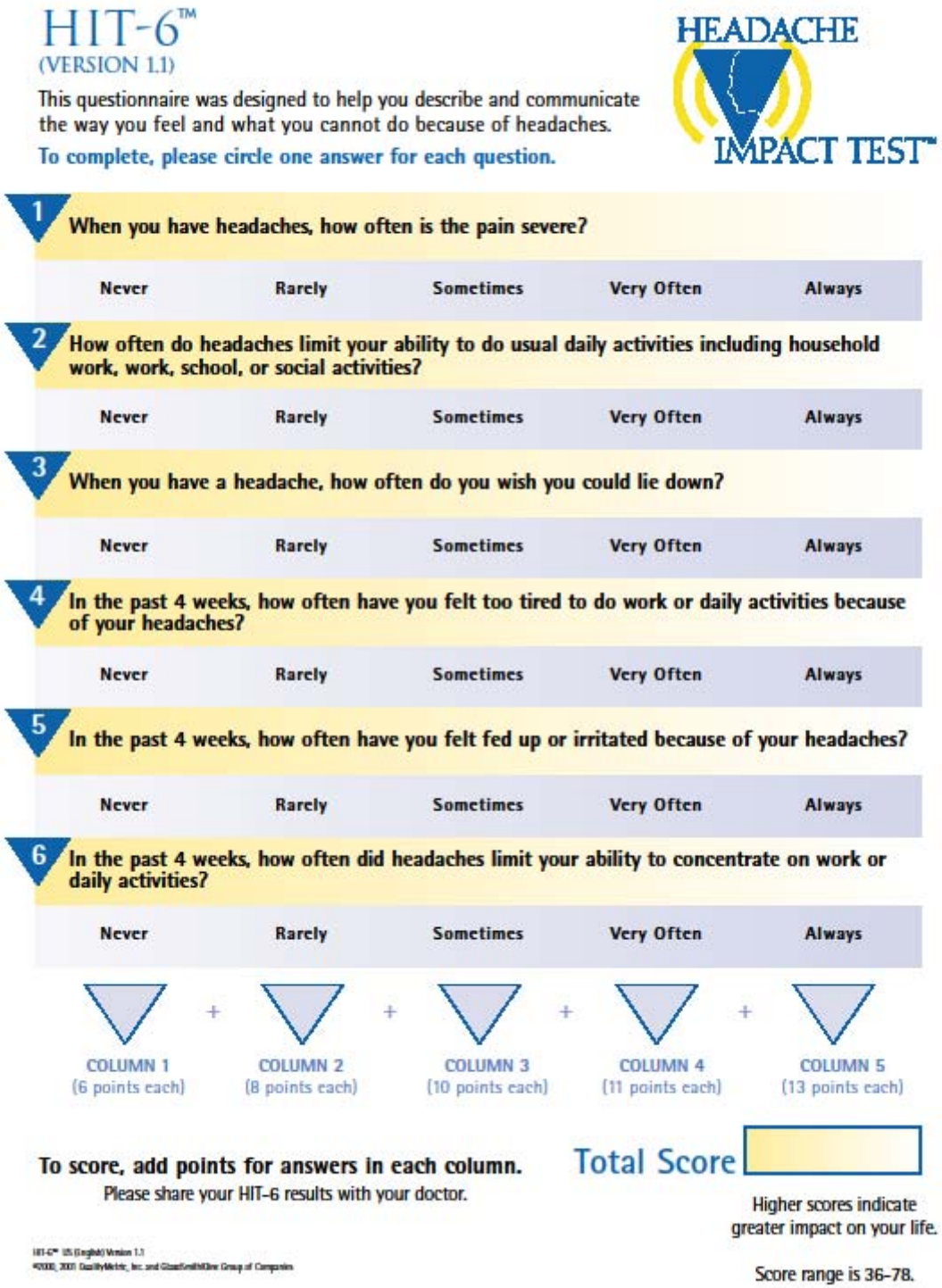
A. On how many days in the last 3 months did you have a headache? (If a headache lasted more than 1 day, count each day.)
B. On a scale of 0 - 10, on average how painful were these headaches? (where 0=no pain at all, and 10=pain as bad as it can be.)

MIDAS Grade	Definition	MIDAS Score
I	Little or No Disability	0-5
II	Mild Disability	6-10
III	Moderate Disability	11-20
IV	Severe Disability	21+

Scoring: After you have filled out this questionnaire, add the total number of days from questions 1-5 (ignore A and B).

If Your MIDAS Score is 6 or more, please discuss this with your doctor.

Headache Impact Test (HIT)



HIT-6™
(VERSION 1.1)

This questionnaire was designed to help you describe and communicate the way you feel and what you cannot do because of headaches.

To complete, please circle one answer for each question.

HEADACHE IMPACT TEST™

1 When you have headaches, how often is the pain severe?

Never | Rarely | Sometimes | Very Often | Always

2 How often do headaches limit your ability to do usual daily activities including household work, work, school, or social activities?

Never | Rarely | Sometimes | Very Often | Always

3 When you have a headache, how often do you wish you could lie down?

Never | Rarely | Sometimes | Very Often | Always

4 In the past 4 weeks, how often have you felt too tired to do work or daily activities because of your headaches?

Never | Rarely | Sometimes | Very Often | Always

5 In the past 4 weeks, how often have you felt fed up or irritated because of your headaches?

Never | Rarely | Sometimes | Very Often | Always

6 In the past 4 weeks, how often did headaches limit your ability to concentrate on work or daily activities?

Never | Rarely | Sometimes | Very Often | Always

COLUMN 1 (6 points each) + COLUMN 2 (8 points each) + COLUMN 3 (10 points each) + COLUMN 4 (11 points each) + COLUMN 5 (13 points each)

To score, add points for answers in each column.

Please share your HIT-6 results with your doctor.

Total Score

Higher scores indicate greater impact on your life.

Score range is 36–78.

Headache IMPACT T E S T ™

What Does Your Score Mean?

If You Scored 60 or More

Your headaches are having a very severe impact on your life. You may be experiencing disabling pain and other symptoms that are more severe than those of other headache sufferers. Don't let your headaches stop you from enjoying the important things in your life, like family, work, school or social activities. Make an appointment **today** to discuss your HIT-6 results and your headaches with your doctor.

If You Scored 56 – 59

Your headaches are having a substantial impact on your life. As a result you may be experiencing severe pain and other symptoms, causing you to miss some time from family, work, school, or social activities. Make an appointment **today** to discuss your HIT-6 results and your headaches with your doctor.

If You Scored 50 – 55

Your headaches seem to be having some impact on your life. Your headaches should not make you miss time from family, work, school, or social activities. Make sure you discuss your HIT-6 results and your headaches at your next appointment with your doctor.

If You Scored 49 or Less

Your headaches seem to be having little to no impact on your life at this time. We encourage you to take HIT-6 monthly to continue to track how your headaches affect your life.

If Your Score on HIT-6 is 50 or Higher

You should share the results with your doctor. Headaches that are disrupting your life could be migraine.

Take HIT-6 with you when you visit your doctor because research shows that when doctors understand exactly how badly headaches affect the lives of their patients, they are much more likely to provide a successful treatment program, which may include medication.

HIT is also available on the Internet at www.headachetest.com.

The Internet version allows you to print out a personal report of your results as well as a special detailed version for your doctor. Don't forget to take HIT-6 again or try the Internet version to continue to monitor your progress.

About HIT

The Headache Impact Test (HIT) is a tool used to measure the impact headaches have on your ability to function on the job, at school, at home and in social situations. Your score shows you the effect that headaches have on normal daily life and your ability to function. HIT was developed by an international team of headache experts from neurology and primary care medicine in collaboration with the psychometricians who developed the SF-36® health assessment tool.

HIT is not intended to offer medical advice regarding medical diagnosis or treatment. You should talk to your healthcare provider for advice specific to your situation.

Appendix D: Triage Protocol

Recommend **Urgen**t Neurological/Headache Medicine Referral:

1. New onset Headache after age 50
2. Sudden onset Headache (e.g. Thunderclap Headache, "worse headache of my life")
3. Accelerating Pattern of Headache (e.g. worsening over weeks/months)
4. New onset focal Neurological signs or symptoms (e.g. sensory, motor, ataxia, meningeal signs)
5. Systemic signs or symptoms (e.g. fever, weight loss, hypertensive crisis, signs of arteritis)
6. Papilledema and/or other acute Neuroophthalmological signs (e.g. visual loss, diplopia)
7. Onset of new or different type of Headache
8. Headache associated with changes in mental status/cognition
9. Recent head trauma
10. New onset Headache in a patient who has cancer and/or is immunosuppressed

Recommend **Early** Neurological/Headache Medicine Referral

1. Complex Headache pattern (e.g. Hemiplegic Migraine, Basilar Migraine, Trigeminal Cephalgia)
2. Headache that does not respond to treatment or diagnosis is in question
3. Headache that interferes with daily activities (e.g. MIDAS score >10, HIT score >50)
4. Chronic Daily Headaches: Headaches occurring 15 days or more per month for at least 3 months
5. Medication Overuse Headaches
    a. MOH: Headaches are experienced 15 or more days/month for at least 3 months
    b. Headaches have developed or markedly worsened during medication overuse
    c. Medications: Ergots, Triptans or Opioid use on 10 days or more per month or simple analgesics (or combination of different drugs) 15 days/month or more or 2-3 treatment days per week

Appendix E: Sample Headache Diary Template

The American Headache Society has a number of templates that patients can leverage to document headache symptoms. Below is a reproduction of a weekly headache diary.

Weekly Diary

Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Dates							
Prodrome							
Aura							
Time of pain onset							
Severity of pain							
Treatment 1 (dose)							
Symptoms (nausea, throbbing, disability)							
Treatment 2 (dose)							
Treatment 3 (dose)							
Time to pain relief							
Noted triggers (caffeine, menses, etc.)							
Type of headache (migraine, tension)							
Other comments or questions							

Appendix F: Axon Registry

The Axon Registry® is a clinical data registry focused on quality improvement. It is a centralized data warehouse that collects relevant patient data and performs statistical analysis on the quality of care provided and patient outcomes.

a) Axon Registry Designated as QCDR

The Centers for Medicare & Medicaid Services (CMS) approved the Axon Registry as a 2017 qualified clinical data registry (QCDR). This designation opens the door for AAN members looking for an easy way to submit quality data to CMS for the Merit-based Incentive Payment System (MIPS).

The Axon Registry is approved by the American Board of Psychiatry and Neurology, Inc. as an MOC Part IV PIP Clinical Module activity and can be used to waive eight Part II Self-Assessment CME credits.

b) Participation

This valuable tool enables neurology practices to identify and improve gaps in the quality of neurological care, demonstrate their value to payers, and compare their performance to neurologists nationwide. Review case studies to learn more about practices' experiences with the registry.

c) Validation

The Axon Registry is the only QCDR in the market validating registry data. The AAN is validating the measures and the data in Axon Registry in several ways.

1. Each practice will have three or more mapping calls with the registry vendor, FIGMD. The purpose of these calls is to review their practice's measure performances and show FIGMD where specific measure documentation is stored within their EHR. After each call, the client account manager on the call will work with the FIGMD mapping team to be sure that work flow is being accurately mapped. The practice is able to continue these mapping calls until they feel confident that their data is being accurately collected.
2. AAN staff, physicians, and representatives from FIGMD regularly review each registry measure to ensure that the algorithms being used are correctly calculating performance rates.
3. The AAN has reached out to multiple practices asking them to independently perform audits on their data and have chart reviews in order to ensure that they feel their practice's performance is being reflected accurately.

Currently, the Axon Registry is available for free to all members of the AAN. For more information please visit https://www.aan.com/practice/axon-registry.

Appendix G: Cost Savings Estimation

Consider the following as a hypothetical example:

If under FFS there are 144 new patients to the practice (12 per month period)

Initial new patient/consult reimbursement = $190[30]
One follow-up visit every 3 months at $125 per visit = $375
For 144 patients ((190 + 375) x 144) = **$81,360**

Under PCHCP:
One time Category 1 payment of $550[31]
Two-thirds do well and move to Category 3 and receives $10 per month for 9 months
One-third to not do well and receives $50 per month for 9 months
For 144 patients ((550 x 144) + ((10 x 9) x 108) + ((50 x 9) x 36) = **$105,120**

Under PCHCP the practice receives **$23,760** more than it would have received under FFS

The additional $23,760 would need to primarily cover additional staff time and other related office expenses. If the practice uses $20,000 for staffing, assuming $50/hour fully loaded ($35/hour plus benefits), it could cover 400 hours for the year, or about 8 hours per week for screening, monitoring and coordination of care. If less expensive staff is used, such as trained Medical Assistants, then more hours are available.

If there are only fewer 10 ED visits among these 144 patients, at $2,500 per ED visit, then $25,000 is avoided. Savings from reduced imaging, inappropriate medication, not to mention improvement in quality of life, are additional benefits.

[30] Using the midrange payment across the country using valuations for 99204 (initial visit) and 99214 (return visit).
[31] Our model provides payments that are adjusted for severity and co-morbidities which is not reflected in this example. We are not suggesting that $550 is the correct payment and are using that figure only for illustration purposes only.

Appendix H: Optional Larger Bundled Payments

The payments described in Sections IV. Payment Methodology would bundle all headache-related physician services into a single payment for a single month or multi-month period. An optional approach would be to include all or part of the patient's other headache-related treatment costs in the payment bundle in addition to the physicians' services. This would provide additional flexibility and an alternative approach to accountability:

- The physician or team of physicians could use the resources available in the larger bundle to pay for services that would not be eligible for payment under the standard fee-for-service payment system.
- The physician(s) would be accountable for ensuring the average of amount of spending for their patients on the services covered by the bundled payments remained within the revenues from those payments.

Since many of the other services covered by the bundled payment would not be delivered directly by the physician practice, this bundled payment would be implemented using retrospective reconciliation.

A. Inclusion of Frequently Used Tests and Imaging Studies in the Bundled Payments

Under Option A, the bundled payment would be designed to cover the cost of all frequently-ordered laboratory tests and imaging studies used for diagnosis of headache and for monitoring of headache treatment in addition to physician services. This option would give physicians flexibility about the tests and imaging studies they order but reward them for reducing avoidable overutilization. The bundled payment would only include tests and studies that are frequently ordered by physicians who are diagnosing or treating headache in order to reduce the amount of random variation in spending and make it more likely that small physician practices could participate in this bundled payment option.

B. Inclusion of Medication Costs in the Bundled Payments

Under Option B, the bundled payment would be designed to cover the cost of medications used to treat headache in addition to physician services and testing/imaging. Outlier payments or adjustments to the payment amounts would be made when new drug options become available that have significantly higher efficacy but also significantly higher cost, or when drug manufacturers increase prices of drugs.

C. Inclusion of All Headache-related Services in the Bundled Payment

Physician practices with the size and capabilities to do so could accept Option C, a bundled payment that would be designed to cover the average costs of all headache-related services needed by patients during a month of care. Examples of additional services include biofeedback, nerve blocks, or psychotherapy. Outlier payments and risk corridors would be established to protect physician practices from financial risk associated with price increases on drugs or hospital services or resulting from patients needing unusually expensive care.

D. Population-based Payment for Headache Care

Option D would be for a physician practice or group of physician practices to accept a condition-based payment to manage the headache-related care of all individuals with diagnosed headache in a broader pre-defined population (e.g., an ACO). The physician practice(s) would receive one monthly payment for all of the individuals with headache in that population, regardless of which category/phase of care they were in, but the amount of the payment would be adjusted based on the proportion of patients in different phases of care (i.e., the relative costs of different phases of care would be used to risk-adjust the overall payment amount) and the characteristics of the patients. This monthly payment could be designed to cover all costs of headache-related care for the patients (as Option C would do for a phase of care) or for a portion of those costs (as the basic payment model and Options A and B would do for each phase of care).