Migraine care challenges and strategies in US uninsured and underinsured adults: A narrative review, Part 2

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Abstract:

Objective: To review the challenges and potential solutions in treatment options for quality migraine care in adult patients who are under or uninsured.

Background: The Affordable Care Act has improved access to health care for many, however those who are underserved continue to face treatment disparities and have inadequate access to appropriate migraine management.

Methods: This manuscript is the second of a two-part narrative review which was performed after a series of discussions within the Underserved Populations in Headache Medicine Special Interest Section meetings of the American Headache Society. Literature was reviewed for key concepts underpinning conceptual boundaries and a broad overview of the subject matter. Published guidelines, state-specific Medicaid websites, headache quality measurement sets, literature review and expert opinion were used to tailor suggested treatment options and therapeutic strategies. In this second part of our narrative review, we explored migraine care strategies and considerations for underserved and vulnerable adult populations with migraine.

Results: Although common, migraine remains untreated, particularly among those of low socioeconomic status. Low socioeconomic status may play an important role in the disease progression, prescription of hazardous medications such as opioids, outcomes and quality of life of patients with migraine and other

headache disorders. There are some evidence-based and guideline supported treatment options available at low cost which include prescription medications and supplements, though approved devices are costly. Resources available online and simple non-pharmacological strategies may be particularly useful in the underserved migraine population.

Conclusions: We identified and discussed migraine treatment barriers that affect underserved populations in the US and summarized practical, cost-effective strategies to surmount them. However, more research is needed to identify the best cost effective measures for migraine management in underserved and vulnerable patients who are uninsured or underinsured.

Introduction

In part one of this review, we described the methodology which led to the execution of this narrative review by the Underserved Populations in Headache Medicine special interest section of the American Headache Society, followed by an exploration of the epidemiology of the underserved population with migraine as well as the challenges in managing patients who are at a disadvantage in this context. In part two , using the same narrative methodology we specifically address management considerations of the underserved population with migraine. There are three approaches generally considered in migraine treatment. These approaches include abortive (acute), prophylactic (preventive), and non-pharmacological (i.e. lifestyle, behavioral changes) treatments and

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modalities. In this section we will explore each therapeutic group with special considerations and suggestions for underserved, vulnerable and underinsured adult populations.

Treatment Considerations and Options

Acute (Abortive) Treatment of Migraine in the Underserved Population

The goals of acute migraine therapy in the underserved population are the same as the goals for the general population at large who suffer with migraine (Table 1).(1) There are several challenges in meeting these goals in the underserved as outlined in part one of this manuscript. An important consideration for populations with migraine who have low socioeconomic status is the risk of developing chronic migraine in association with medication overuse that can occur with acute medications. At least two-thirds of people with medication overuse headache (MOH) have migraine as their primary headache disorder. (2) The sociodemographic profile of the MOH population with chronic migraine is characterized by a higher proportion of women, a lower education level, and a higher level of unemployment as compared to those with episodic migraine. (3)

Most all of the group 1 (proven, pronounced statistical and clinical benefit) medications recommended in the 2000 AAN practice parameter and the Level A (established as effective based on available evidence) medications listed by the American Headache Society Guidelines Committee are substances that can be

associated with MOH in susceptible persons. (4) Prochlorperazine IV (Group 1, Level B) is the only exception. (1, 5) Although relatively inexpensive medications, butalbital-containing products and opioids may lead to the development of MOH in the medically underserved as readily as in the general migraine population. Opioid use has been associated with lower annual household income when compared to nonusers and opioid users are less likely to be currently married or employed.(6) It is possible that increased use of opioids in the underserved population particularly elevates the risk of MOH. In addition, opioids and butalbital-containing medications may be more forceful drivers of MOH.(4) In our experience, unlike triptans, practitioners prescribing opioids and butalbital-containing compounds typically do not face quantity limits which may lead to more frequent use and place such patients at a higher risk of medication overuse. Therefore, the use of butalbital-containing products and opioids should be limited or avoided in the underserved with migraine.

Similar to the general population, patients in underserved and vulnerable populations with migraine need a formal management plan in which appropriate therapeutic goals and realistic patient expectations are set. Potential barriers to management plans in underserved/vulnerable populations may include a lack of formal education and low literacy. Persons with less education may be more concrete in their thinking operations and may have trouble thinking beyond the current state to plan for future events.(7) It is important to ensure understanding of the goal(s) of successful abortive treatment. These goals may include decreasing and eliminating the use of poorly tolerated, ineffective or unwanted

acute medications. Thus, clinical guidelines may provide practitioners with a good starting point to initiate appropriate treatment options. Another goal of an abortive plan may be to reduce the management of non-emergent headache attacks in the emergency department (ED). (8) One multicenter study has shown that opioids are ordered for acute migraine treatment in 12.3% of academic medical center visits, 40.9% of urban ED visits, and 68.6% of community ED visits.(9) ED management often includes non-migraine specific medications and opioids.

The 2000 AAN practice parameter for migraine recommends meeting the goal of acute management by using migraine specific agents (triptans and DHE) for patients with moderate to severe migraine or poor non-steroidal anti-inflammatory drug (NSAID) responders. (1) These medications have proven efficacy. Unfortunately, some may cost in excess of $12 per dose and are strictly limited in monthly quantity on many Medicaid plans.(10) Oral NSAIDs and combination analgesics with caffeine are considered reasonable first-line treatment choices for mild to moderate migraine attacks or severe attacks, which have previously responded to NSAIDs. Many generic NSAIDs are covered on Medicaid plans. Ibuprofen and naproxen are often included in reduced cost cash pay formularies (see Table 2). Acetaminophen, which was considered clinically ineffective per the 2000 AAN practice parameter has been elevated to a Level A for non-incapacitating attacks in more recent AHS guidelines.(5) Acetaminophen, in combination with acetylsalicylic acid and caffeine, may be more effective in severe migraine headache attacks. (11)

Gleaning from the list of medications in Group 2 (moderate statistical and clinical benefit) and Level B (probably effective) are the NSAIDs flurbiprofen PO, ketoprofen PO and ketorolac IV/IM. Dopamine antagonists prochlorperazine IV/IM, chlorpromazine IV, metoclopramide IV and prochlorperazine 25 mg PR are also Group 2 and Level B agents. (1, 5) These are abortive medications with low risk of causing MOH. Attempting oral use of dopamine antagonists alone or in combination for analgesia has not been rigorously studied but may be reasonable as they often appear on low cost formularies and have antiemetic effects. (12, 13) Promethazine has the lowest risk of extrapyramidal side effects, as it is a weak dopamine antagonist which has strong anticholinergic and antihistaminic effects, though studies specifically in migraine are lacking.

Two antihistamines may be used as adjuvant medications to dopamine antagonists to prevent akathisia. Hydroxyzine possesses anxiolytic qualities and has been studied for use in pain alone and with DHE in migraine. (14, 15) Diphenhydramine is frequently used as a parenteral adjunct for migraine treatment in the ED, though study results have been mixed.(16-21) Neither drug is listed in the AHS guidelines or the 2000 AAN practice parameter.

Finally, baclofen is a GABA receptor agonist used to treat spasticity. A few studies have been conducted using it in the treatment of migraine or pain.(22-24) Baclofen is often listed on the low cost cash formularies and may be considered as an acute medication for migraine in our experience and in the limited literature reports. Again, neither the AAN practice parameter nor the AHS

guidelines evaluated this medication because of a low quality of evidence. (See Table 2)

Prophylactic (Preventive) treatment of Migraine in the Underserved Population

Migraine is undertreated with prophylactic medication in the US population as a whole. Of those who receive prophylaxis, prophylactic medications with low quality evidence are prescribed to just over one-fourth of patients with migraine.(25) In fact, it is almost twice as likely that people with migraine will only receive prophylactic medications with low-quality evidence as it is that they will receive prophylactic medications with only high-quality evidence.(25) We will review the goals of prophylactic or preventive agents in migraine, the considerations for their use, and tips to optimizing preventive therapies in this section of the manuscript. Some natural supplements and complementary agents have high-level evidence as migraine prophylactic agents and they will be discussed in a subsequent section.

The goals of preventive or prophylactic agents usually include one or more of the following: 1) reduce frequency of headache attacks, 2) reduce duration of headache attacks, 3) reduce the number of days of headache, 4) reduce the use/need of abortive medications, and 5) improve quality of life.(26, 27) Prophylaxis may also help to reduce the associated symptoms of migraine as

well as the interictal burden. Prevention should be offered to those with migraine reporting 6 or more headache days per month, 4 or more headache days with at least some impairment, or 3 or more headache days with severe impairment or requiring bed rest, and should be considered in patients with 4 or 5 migraine days per month with normal functioning, 3 migraine days with some impairment, or 2 migraine days with severe impairment.(27) Patients should be informed that it may take approximately 12 weeks at an effective, appropriate dose of the prophylactic agent before results are seen and goals are realized. Counseling of prophylaxis may be very important to maximize adherence and avoid early prophylactic discontinuation (i.e. after 2-3 weeks of taking agent) due to "lack of response" as an adequate trial is necessary. Initiation of therapies at the lowest effective dose is recommended with slow titration until clinical benefits are realized without untoward effects or limited by untoward effects. Overuse of abortive medications should be avoided. Comorbid conditions and coexisting illnesses should be considered when prescribing medications. Headache diaries or calendars may be very helpful in patient management and are available at very little or no cost to patients. As mentioned previously, these recommendations are time consuming to implement in the clinical setting and underserved populations with migraine may not be well positioned to receive them because of poor access to care or low educational levels.

The American Academy of Neurology Headache Quality Measure Set (AAN-HQMS) recommended guideline prophylactic medications for episodic

migraine: level A are divalproex/sodium valproate 400-1500mg/daily, topiramate 25-200mg, propranolol 80-240mg, metoprolol 47.5-200mg and timolol 10-15mg BID. Frovatriptan can be tried for short-term prophylaxis of menstrual related migraine (MRM).(26) Although frovatriptan has level A evidence for the prophylactic treatment of MRM, other triptans (e.g. zolmitriptan, sumatriptan, rizatriptan) have also been shown to be effective. A generic or lower cost triptan (e.g. naratriptan 1mg/d for six days, or zolmitriptan 2.5mg BID/TID for five days (level B), sumatriptan 25mg TID for five days) may provide an effective low cost alternative for the prophylaxis of MRM; however, such use often exhausts the monthly triptan allotment by insurance coverage including Medicaid.(28, 29)

Level B prophylactic recommendations include amitriptyline 25-150mg/daily, venlafaxine 75-225mg, atenolol 100mg daily, nadolol, NSAIDs (fenoprofen 200-600mg, ibuprofen 200mg BID, ketoprofen 50mg TID, naproxen 250-500mg daily, naproxen sodium 550mg BID) histamine 1-10ng subcutaneously twice a week and bisoprolol 5-10mg daily. (26) NSAIDs may have a protective effect when used 5-10 days per month, however taken ≥10 days per month, NSAIDs may increase the risk of medication overuse headache.(4, 26) State-specific Medicaid program websites can be helpful for identifying low cost, coverage status and other useful information about high quality prophylactic medications for underinsured within individual states.(26, 30, 31) (See Table 3)

Natural supplements/Nutraceuticals:

Several supplements are used to reduce the frequency and associated symptoms of migraine. Some of these may be prescribed and others purchased over the counter. Evidenced-based guidelines rate magnesium, riboflavin and feverfew as probably effective while co-enzyme Q10 is rated as possibly effective. (30) Petasites, or Butterbur, has been rated as effective, however there is current controversy over its safety. It is often falsely believed that natural supplements are without side effects, however, this is not always the case and requires counseling to patients in the same manner as prescription preventive therapies. We will explore some of the uses as well as potential adverse effects of natural supplement use in migraine.

Magnesium may be particularly effective for patients with migraine aura and those with menstrual migraines.(29, 32-34) Different formulations exist but the chelated forms are better tolerated. Magnesium citrate has been shown to be more bioavailable than magnesium oxide (35). Magnesium glycinate also appears to be highly bioavailable. The recommended doses are 400 to 600 mg daily depending on tolerability.(36, 37) Side effects include softening of stool or diarrhea.

Several studies support use of riboflavin (vitamin B2) for migraine prevention. The recommended doses are up to 400 mg a day in adults. Side effects include bright yellow discoloration of the urine, frequent urination and less commonly diarrhea.(38)

Although preparations of feverfew vary widely, MIG-99, a specific feverfew CO2-extract, has been shown to be safe and effective at 6.25mg TID. Side effects may include gastrointestinal upset, mouth ulcers and a "post-feverfew syndrome of joint aches". (39, 40)Dosing of co-enzyme Q10 for adults is 300 mg once a day. Side effects, although appearing rarely, can include gastrointestinal upset and skin allergies.(41, 42)

Although the level of evidence varies, other natural supplements such a thioctic acid 600mg/day (for migraine prophylaxis), vitamin E 400IU for 5 days (for menstrual migraine prophylaxis), and ginko biloba (for prophylaxis of migraine aura) may be helpful in migraine and its associated symptoms in select populations. (43-47)

Cost may also be a concern with supplements since they are not generally covered by insurers. For example, Co-enzyme Q10 and Butterbur can be costly. However, magnesium, riboflavin and feverfew are readily purchased in a health food store or pharmacy and are relatively inexpensive. Vitamin E use for menstrual or menstrual-related migraine as described above is also relatively inexpensive. Patients may be encouraged to browse online for the best value (price, quantity and quality). It is important to note that the US Food and Drug Administration does not regulate natural supplements.

Chronic Migraine Prophylaxis

Expert consensus supports the use of migraine preventive strategies considered effective for episodic migraine in chronic migraine. Topiramate has also been

shown to be effective specifically for chronic migraine.(48) Topiramate is available in a generic form in the US. Currently, onabotulinumtoxinA is effective and the only US-FDA approved treatment for chronic migraine.(49-53) It has been shown to be cost-effective in patients with chronic migraine and may decrease ED utilization and hospitalizations. Treatment with onabotulinumtoxinA may result in overall health cost savings and increase quality of life for patients with chronic migraine. (54, 55) Although we have found this treatment to be partially covered in some Medicaid programs, the proportion that remains for patients to cover may be an expense that presents an economic barrier for patients to receive treatment. Insurance authorization and a step-wise approach are required for most insurances to limit cost despite the lack of evidence-based justification for this strategy. However, the reduction in headache-related health care utilization among adults with chronic migraine treated with onabtulinumtoxinA as compared to oral migraine prophylactic medications suggest a potential benefit from earlier initiation. (56) In addition, this therapy does not feature any concerns about adherence because of practitioner administration and the long therapeutic benefit over a 3 month period.

Devices:

Newer devices and products that have demonstrated some evidence for efficacy in headache disorders are emerging. Two devices have recently been FDA approved and have come to market for the care of migraine in the US; a transcutaneous supraorbital neurostimulation device, Cefaly®, and a single pulse

transcranial magnetic stimulator, SpringTMS®. (57-60) However their costs may be prohibitive in this population. The Cefaly device was the first FDA approved device for the prophylactic treatment of migraine and is now approved for acute attack treatment as well. However, this device and its accessories are not covered by most insurances and out-of-pocket cost are usually around $375.00 USD. The SpringTMS® device has been FDA approved for the acute treatment of migraine with aura and for migraine prophylaxis.(61) The cost to rent this device is $250.00 USD per month billed in 3 month increments and an initial shipping fee of $50.00 USD. In our clinical practice, we have not found these costs to be routinely covered by insurances. To the authors' knowledge, neither device company currently have programs in place to help care for underinsured populations.

Low/Non-cost Non-pharmacological treatment modalities

Migraine may be best managed in a multi-modal fashion.(62, 63) In addition to medication, non-pharmacological approaches can be employed.(64) These modalities include lifestyle changes, stress management, use of heat or cold, and addressing migraine comorbidities that contribute to its chronification.(63, 65) Information about complementary treatments as well as methods for addressing these factors can be low-cost or free and include patient education as well as resources patients can access themselves. Finally, the

engagement of other health professionals can be useful in addressing the burden of migraine.(62)

Other Alternative treatments: Acutely, many patients find heat or cold packs, a hot shower or a combination of these beneficial in dampening down the pain of migraine or tension-type headache.(66) Some patients find topical treatments such as herbal balms with small amounts of menthol or camphor (one of the main components of *Tanacetum parthenium*) applied to the temples, forehead or base of the neck helpful.(67, 68) Inhalation of lavender essential oil for 15 minutes may be helpful for some patients with migraine.(69) Deep relaxation, diaphragmatic breathing and cognitive behavioral techniques to adapt behavioral responses to pain can also be useful. (70, 71) Mindfulness and meditation may also be helpful.(65, 72, 73) Teaching these techniques is simple and there are multiple online resources for downloadable exercises easily found via internet search engines (e.g. search term = “downloadable deep relaxation and breathing techniques”). Avoidance of migraine triggers is also recommended.(74) Trigger management apps, online educational resources and patient support organizations may be considered to supplement headache management. Most public libraries have computers and Internet services that can be readily accessed by patients who do not have computers or Internet access at home.

Lifestyle and other health factors: Chronification of migraine has been associated with stressful life events, medication overuse, obesity, sleep

disturbance, depression and caffeine overuse.(75, 76) Modifying these risk factors can be as important as medication initiatives and can directly improve patient outcomes. Additionally, sleep, diet, exercise and hydration all seem to play a role in migraine. Limited resources can be a barrier to addressing these but patient education and engagement of other health care professionals can be employed at low or no cost. Table 3 outlines many of these aspects and contains simple recommendations for the patient that can be readily integrated into patient care.

Other Conditions and Considerations:

Medication Overuse: Educating patients about medication overuse and its contribution to headache chronification should be considered a foundation for discussing acute treatments. Limiting acute treatments to 2-3 days per week or less can be the first step towards improving outcomes and will enhance the patient's response to preventatives.

Depression: Identification of depression historically has been time consuming leading to under diagnosis of this disorder.(77) However, a simple self-administered screening tool such as the PHQ-9 can be used to identify those with depression which may be useful in the management of underserved populations who have limited access to behavioral health professionals.(77) In addition to anti-depressant medications that can dovetail as headache prevention

agents, referral to a clinic social worker may provide the additional needed therapy at low or no cost.

Use of Other Healthcare Professionals: Primary care physicians most commonly treat patients with migraine, although universal awareness of migraine guidelines is lacking. (78) Patients should be referred to neurologists when migraine is refractory to treatments, associated with a high degree of disability, or have atypical symptoms. Referral to headache subspecialists or integrative headache care centers are often effective for chronic or treatment refractory migraine cases (62) but such specialists are often aggregated in selected geographic areas(79) or lacking in many states entirely(80). In a clinic setting, referrals to in-house healthcare professionals can be employed to reduce other comorbidities. Many Medicaid Clinics have a nutritionist consultation service. Using this resource can help patients in weight reduction and in learning healthy eating habits. Additionally, clinic social workers can help in addressing mood disorders, teach cognitive behavioral techniques and other coping strategies to deal with pain as well as to reduce stress. They also can be a referral source for help in other areas of the patient's life to reduce stress, such as city or state legal or housing resources and protective services (Table 4). Given that temporomandibular disorders (TMD) are comorbid with migraine and are a risk factor for migraine progression (81-88), it may be helpful if people with migraine and comorbid TMD are referred to a dentist trained in orofacial pain to manage the TMD aspect of the patient's pain.(86)

Adherence

Studies investigating adherence to migraine management are limited but increasing in recent years; it is a major topic of concern for the underserved with migraine. In reviewing the literature, description of adherence has been either vague or relied on self-report, and there has been no recommendation on how to improve adherence in patients with recurrent migraine. Ramsey et al. published a systematic review that showed overall compliance to treatment, including those considered non-pharmacological, ranged from 25-95%, but there is little demographic information that addresses or explains these differences.(89) One study showed no significant difference in medication compliance between African-American and Caucasian patients with migraine.(90) However, African-Americans and young patients were less likely to return for follow-up appointments. In the same study, socioeconomic status influenced adherence among Caucasians but not among African-Americans. There does appear to be specific management recommendations where patients are likely to be adherent, such as, once daily dosing over twice daily dosing(91) and the use of a multidisciplinary approach with frequent encounters between provider and patient. (92) Furthermore, those who practice regular aerobic exercise tend to adhere more than those who are instructed on healthy habits and practice relaxation techniques.(92) In general, adherence remains a concern for patients with migraine as those who adhere with consistent management, whether pharmaceutical, behavioral or lifestyle modification, tend to have overall

improvement of headache related outcomes (lower headache frequency and disability scores).(63, 93)

Summary & General Approach to the Underserved Population:

In summary, multiple barriers exist in providing optimal headache care to underinsured, uninsured and Medicaid populations. Greater awareness and a systematic approach may reduce the impact of the headache burden, which disproportionately afflicts underserved communities.

There are several options to optimize migraine care in adult patients who are uninsured or underinsured. This manuscript examines some potential non-opioid solutions to comprehensive care for underserved populations, however may not be all-inclusive. Although opioids and butalbital-containing compounds are often covered by Medicaid or offered at a very low cost for patients to receive, practitioners should avoid them as much as possible in this population. Opioid use for migraine is associated with more severe headache-related disability, symptomology, comorbidities (depression, anxiety, and cardiovascular disease and events) and greater need to see health care providers. (6) Opioids are not a substitute for a comprehensive headache treatment plan. Caution is also advised with the use of butalbital-containing medications as these combination medications can lead to medication overuse headache with only five days of use per month for three months.(94) Providers are encouraged to actively seek safer alternatives. Counseling, abortive therapies with limits,

prophylaxis and non-pharmacological modalities as appropriate may be the constituents of a comprehensive migraine treatment plan.

Finally, newer products demonstrating efficacy and safety in the treatment of migraine and other headache disorders are emerging, including for the first time biological therapies. Monoclonal antibodies to calcitonin gene-related peptide and its receptor appear to be a promising preventive treatment for migraine and chronic migraine(95, 96) and are likely to come to the market in 2018. In an analogous situation with another neurological disorder, the US has witnessed increased costs with disease-modifying therapies (DMT) for the treatment of multiple sclerosis. DMT costs have skyrocketed beyond inflation over the last several years and are currently 2 to 3 times higher in the US than in other comparable countries, generating concern within the neurology community. (97, 98) It is our hope that technological, pharmaceutical and other industries consider as well as implement plans to make their emerging headache therapies including biological drugs and devices accessible to underserved and underinsured populations.

Limitations

There are inherent limitations in this 2-part narrative review. The authors undertook this review because of the paucity of research on this particular topic and therefore may be subject to bias. This manuscript does not address all social determinants that are likely to play a role in the headache health of underserved and underinsured populations (e.g. cultural considerations,

environments/community, transportation, etc.). A multi-collaborative systematic approach may be needed to address these concerns of underserved and vulnerable populations. Although many of our recommendations are derived from recently published guidelines, some are not and the body of evidence varies. Quality headache care is needed for these vulnerable populations. In addition, telemedicine is becoming more widely used for neurological conditions and may be a mechanism to address barriers to care, provide medical consultation, and may provide cost-saving alternatives for underserved and underinsured populations in headache medicine.(99, 100)

More research is needed to explore mechanisms to improve quality care, decrease gaps in care, investigate low cost therapies, balance cost and policy with medical innovation, and address headache care inequities of underserved, vulnerable, underinsured and uninsured populations.

Conclusion:

Migraine is a common, undertreated, and underdiagnosed disorder which is even more prevalent and may have a worse course among those with a low socioeconomic status. Moreover, a number of individual, societal and healthcare barriers negatively influence underinsured and uninsured migraine sufferers. Low socioeconomic status may play an important role in the disease progression, characteristics, outcome and quality of life of patients with migraine and other headache disorders. Research is needed to identify the best cost-effective measures for migraine management especially during this period of rapidly

changing healthcare policies and medical innovation. Although cost remains an issue, conscientious comprehensive headache treatment plans are valuable, available, and may be needed to improve patient outcomes in the underinsured and uninsured.

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Table 1: 2000 AAN Practice Parameter: Acute treatment goals (1)

1. Treat attacks rapidly and consistently without recurrence.
2. Restore the patient's ability to function.
3. Minimize the use of back-up and rescue medicines.
4. Optimize self-care and reduce subsequent use of resources.
5. Be cost effective for overall management.
6. Have minimal or no adverse events.

Table 2:

Acute Medications for Migraine Covered by Nebraska Medicaid (1, 5, 16, 26, 30, 31))

Acute Medication	Formulation/strength	Preferred Drug	Prior Authorization required	Medicaid State Maximum Allowable cost
Level A/Group I				
Ibuprofen	600, 800 mg tab	preferred		$0.04821 $0.05695
Naproxen	375, 500 Mg tab	preferred		$0.05360 $0.06499
Diclofenac	50 mg tab	preferred		$0.27500
Diclofenac	50 mg powder pack	Non-preferred	PA required	N/A
Sumatriptan	50, 100 mg tab	preferred		$0.69182 $0.71020
Rizatriptan	5, 10 mg tab	preferred		$0.96033 $1.26038
Rizatriptan	5, 10 mg ODT	preferred		$1.56000 $1.75647
Level B/Group II				
Flurbiprofen	50, 100 mg tabs	preferred		$0.43027
Ketoprofen	50, 75 mg tab	Non-preferred		$0.38605 $0.49982
Codeine/APAP	30/300 mg tab	preferred		$0.50960
Promethazine	25 mg suppository	preferred		$8.74317

Uncategorized				
Baclofen	10 mg tab	preferred		$0.20932
Prednisone	10, 20 mg tab	Preferred		$0.15689 $0.18760
Dexamethasone	4 mg tab	N/A	N/A	N/A
Prochlorperazine	5, 10 mg tab	preferred		$0.06700 $0.07370
Metoclopramide	10 mg tab	preferred		$0.04020
Haloperidol	1, 2, 5 mg tab	preferred		$0.38860, $0.54873, $0.83951
Promethazine	**25 mg tab**	**preferred**		**$7.30639**

https://druglookup.fhsc.com/

Table 3:

High Quality (Level A or B) Prophylactic Medications for Migraine Covered by Nebraska's Medicaid(26, 30, 31)

Prophylactic Medications	Formulation/Strength	Preferred Drug	Prior Authorization Required	Medicaid State Maximum Allowable Cost
Level A				
DIVALPROEX SODIUM	250MG TAB	N/A	N/A	$0.09380
TOPIRAMATE	25 MG TABLET	Preferred	N/A	$0.03815
PROPRANOLOL	80MG TAB	Preferred	N/A	$0.50649
METOPROLOL SUCC ER	50 MG TAB	Preferred	N/A	$0.37520
TIMOLOL MALEATE	10 MG TABLET	Non-preferred	N/A	N/A
BISOPROLOL FUMARATE	5 MG TAB	Non-preferred	PA required	$0.44533
Level B				
AMITRIPTYLINE HCL	25 MG TAB	N/A	N/A	$0.32160
VENLAFAXINE HCL	75 MG TABLET	Preferred	N/A	$0.25366
ATENOLOL	100 MG TABLET	Preferred	N/A	$0.03279
NADOLOL	40 MG TABLET	Non-preferred	PA required	$2.21100
IBUPROFEN	200 MG CAPLET	Preferred	N/A	$0.02500

KETOPROFEN	50 MG CAPSULE	Non-Preferred	PA required	$0.38605
NAPROXEN	250 MG TABLET	Preferred	N/A	$0.04020
NAPROXEN SODIUM	550 MG TAB	Non-Preferred	PA required	$2.12179

Table 4:

Low cost behavioral and lifestyle recommendations for headache management

Lifestyle Factor	Recommendation	References (101-109)
Hydration	Drink 6-8 cups of water a day	Wöber, Christian, and Çiçek Wöber-Bingöl. "Triggers of Migraine and Tension-type Headache." *Handbook of Clinical Neurology Headache* (2010): 161-72.
Sleep	Encourage good sleep hygiene and a regular waking time daily	Rasmussen BK. Migraine and tension-type headache in a general population: precipitating factors, hormones, sleep patterns and relation to lifestyle. Pain April 1993. Vol 53(1):65-72. (Guidetti V. Sleep and headaches. In: Wuidetti V, Sillanpaa M, Russell G, Winner P, eds. Headache and migraine in childhood and adolescence. London: Martin Dunitz 2002:417-31.)
Caffeine	Limit caffeine to 8oz a day	Tepper, Stewart J., and Deborah E. Tepper. "Preventative Treatment of Episodic Migraine." The Cleveland Clinic Manual of Headache Therapy (2014): 161-78. Addicott, Merideth A. et al. "The Effect of Daily Caffeine Use on Cerebral Blood Flow: How Much Caffeine Can We Tolerate?" *Human brain mapping* 30.10 (2009): 3102–3114. *PMC*.
Exercise	Regular exercise of at least 3 times a week for 20 minutes or more. Free or low-cost gyms are in many cities and towns. Online exercise programs are also available.	Varkey, Emma, Asa Cider, Jane Carlsson, and Mattias Linde. "A Study to Evaluate the Feasibility of an Aerobic Exercise Program in Patients With Migraine."

		Headache: The Journal of Head and Face Pain 49.4 (2009): 563-70.
Diet	Eat meals on regular basis. Don't skip meals. Avoid processed foods. Avoid their known triggers. Refer to nutritionist for help in weight loss.	A. I. Scher, W. F. Stewart, J. A. Ricci, and R. B. Lipton, "Factors associated with the onset and remission of chronic daily headache in a population-based study," Pain, vol. 106, no. 1-2, pp. 81–89, 2003.
Stress Reduction	Encourage enhancing activities ranging from exercise/sports to meditation and mindfulness. Cognitive Behavioral Techniques can also be useful. Online resources exist. Referral to clinic social worker.	Breslau, N., R. B. Lipton, W. F. Stewart, L. R. Schultz, and K. M.a. Welch. "Comorbidity of Migraine and Depression: Investigating Potential Etiology and Prognosis." Neurology 60.8 (2003): 1308-312.
Medication Overuse	Discuss limits on acute treatments to no more than 2-3 days a week.	Bigal, ME, AM Rapoport, FD Sheftell, SJ Tepper, and RB Lipton. "Transformed Migraine and Medication Overuse in a Tertiary Headache Centre - Clinical Characteristics and Treatment Outcomes." *Cephalalgia* 24.6 (2004): 483-90.

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