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## The Intersection of COVID-19, School, and Headaches: Problems and Solutions

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### Abstract

**Objective:** To equip clinicians with recommendations specific to concerns related to the novel coronavirus disease 2019 (COVID-19), which impact the physical, emotional, and social health of youth with headache disorders.

**Background:** COVID-19 has affected societies on a global scale including children and youth with chronic headache disorders. Many concerns are predicted to arise in the 2020–2021 school year, whether classes are conducted in-person or virtual.

**Methods:** Clinical impressions were combined with a review of the literature, although limited due to the recency of this issue.

**Results:** We describe recommendations to support caregivers and youth as they face changes expected with the return to school this Fall.

**Conclusion:** Although there are significant concerns for caregivers and youth with migraine given the context of changes related to the pandemic, there are many recommendations that can

help minimize exacerbations of the physical, emotional and social health of youth with chronic migraine.

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## Introduction

The World Health Organization (WHO) declared the 2019 Novel Coronavirus Disease (COVID-19) as a global pandemic on March 11, 2020. In an unprecedented response, more than 188 countries imposed school closures, affecting more than 1.5 billion youth<sup>1</sup>. Many schools implemented distance learning platforms for academic continuity, but the quality and accessibility of distance learning varied greatly.

Under normal circumstances schools play a meaningful role in reducing social and racial inequality<sup>2</sup>, but the “digital divide” has compounded pre-existing educational inequities. It is estimated that 17% of U.S. students do not have access to a computer in the home and 15% lack access to broadband internet in the home<sup>3</sup>. Families in which parents and guardians work full time, have limited experience using necessary technology, or do not speak English as their primary language faced additional barriers. Schools faced challenges in serving students with disabilities, learning differences, and complex medical issues through distance learning<sup>4</sup>.

In our clinical experience as headache specialists, distance learning experiences in children and youth with headache have varied. For some, the increased flexibility with distance learning, the ability to self-pace, and the perceived decreased physical and social demands may have been beneficial in alleviating headache burden. Conversely, for others, factors such as increased screen time and poor ergonomics, stress associated with uncertainty and time management, disruption of routine and sleep schedule, difficulty with time-management, stressful home environment, food insecurity, and increased isolation due to the pandemic may have worsened headache burden. There are not yet published data to support or refute these clinical observations.

For the 2020–2021 school year, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) has recommended that return to school be guided by the best interest of the child and overall education, public health, and socio-economic considerations<sup>5</sup>. The American Academy of Pediatrics (AAP) has taken the position that “all policy considerations for the coming school year should start with the goal of having students physically present in schools”. However, in many locations there are concerns that the AAP’s recommendations to mitigate risk could not be met<sup>2</sup>. As a result, schools are choosing from different options: full time in-person learning, hybrid learning that combines in-person and virtual days, and a fully virtual program without any in person instruction. Each option has factors that could exacerbate headache disorders.

In these uncertain times we, as clinicians, have more questions than answers for our patients. We have found that discussions with colleagues have been vital in determining creative solutions for the patients seen in our practices. Realizing that we were all facing the same issues, the authors came together to outline the relevant questions. We assigned topics to coauthors with the most knowledge in that area, each of whom incorporated the available,

albeit limited, literature, as well as lessons learned from past patients who have utilized non-traditional school settings (cyberschool, homeschool). We then revised the manuscript together, ensuring consensus. This paper is a compilation of expert opinion on how to best help youth with headache disorders as they return to school in light of the COVID-19 pandemic. In some cases the supporting evidence is drawn from the migraine literature, but these recommendations are not migraine-specific. In fact, though our goal as pediatric headache clinicians is to help this group of patients, these recommendations are relevant to children without headaches as well. We organize topics by the acronym SMART: Sleep, Meals, Activity, Relaxation and Stress Management, Trigger avoidance<sup>6</sup>.

## COVID-19-related school changes that may affect headaches

### Sleep:

Sleep disorders are a common comorbidity and sleep disturbances are often reported as a headache trigger by children with migraine<sup>7-9</sup>. Sleep affects quality of life and mood<sup>7</sup>, and is foundational to all aspects of health.

**Problem – Poor sleep quality:** Poor sleep is associated with increased headache severity and disability in youth<sup>8,9</sup>. Decreased daily structure in the context of virtual learning may allow for vastly different bed/wake times compared to during a typical school year. Although virtual school could enable sleep schedules more in line with adolescents' physiological sleep-timing delay<sup>10</sup>, virtual school may also promote poor sleep hygiene such as working in bed, napping, or staying up very late, which can disrupt the sleep-wake cycle. Excessive/prolonged screen use has also been associated with shorter and poorer quality of sleep<sup>11</sup>, with a dose-dependent relationship<sup>12</sup>.

**Solution:** Optimizing sleep during virtual learning may help to enhance improved focus, attention, and mood. This may in turn impact self-directed learning expected during virtual instruction<sup>13,14</sup>. On a societal level, high schools should comply with the AAP's recommendation to start both in person and synchronous virtual classes no earlier than 8:30am<sup>10</sup>. On the individual level, common clinical recommendations are outlined in Table 1. These are largely based on expert opinion, with citations where possible.

### Meals:

Healthy diet<sup>15</sup> and adequate hydration<sup>16</sup> are important healthy habits for youth to maintain for overall health.

**Problem – Inconsistent meal times.—**Fasting is a commonly reported headache trigger<sup>17</sup>. Increased unstructured time at home can make maintaining regular eating habits difficult.

**Solution:** Children should be encouraged to eat breakfast and not skip meals throughout the day. Setting mobile phone reminders, and parental encouragement can help maintain good habits.

**Problem - Dehydration:** One-third of people with migraine report dehydration as a headache trigger<sup>18</sup>. Universal facial coverings and physical distancing recommendations may hinder the ability to maintain adequate hydration throughout the day.

**Solution:** Allowing frequent hydration while considering school safety guidelines will be important for reducing risk of dehydration. Some schools are restricting use of water fountains, but permitting children to refill bottles. Hand hygiene stations near water fountains should be implemented. Although less environmentally conscious, disposable water bottles could mitigate the risk of contamination by avoiding the need to refill water at school. Outdoor classroom settings and physical distancing of at least 6 feet would increase safety for students to remove facial coverings and hydrate during class<sup>2</sup>.

**Problem – Food insecurity and risk of weight gain:** Since the onset of the pandemic, issues with food production and distribution have led to increases in food prices<sup>19</sup>. Simultaneously, widespread increases in unemployment and underemployment have made purchasing healthy food even harder. This has led to a 130% increase in food insecurity in households with children 18 years old from 2018 to 2020<sup>19</sup>. Food insecurity can increase further when children cannot receive free or subsidized meals at school<sup>19–22</sup>. Food insecurity has been linked to risk of weight gain and obesity<sup>19–22</sup>, and will be compounded by decreased physical activity and increased screen time<sup>21, 23–26</sup>. Weight gain and obesity are associated with migraine frequency and disability<sup>27, 28</sup>. African American and Hispanic children may face disproportionate weight gain during school closures<sup>21, 29</sup>, putting them at higher risk of worsening migraine.

**Solution:** Some schools successfully delivered lunches to students via school bus<sup>21</sup>. Local food banks are expanding service during the crisis to specifically address food insecurity (additional information can be found at <http://feedingamerica.org>). Increasing access to local farmers markets and providing free membership to co-op markets with cheaper produce could be an additional way to help youth obtain more healthful food<sup>21</sup>. As much as possible, children should eat a balanced diet filled with green leafy vegetables, fruit, and protein. Frozen fruit, vegetables, and dry goods like lentil and beans with long shelf lives are more healthful than heavily processed foods and can help limit shopping trips.

#### Activity:

There is evidence that physical activity reduces migraine frequency, intensity, and duration<sup>30</sup>. In contrast, prolonged positions and poor posture can trigger and/or exacerbate migraine symptoms<sup>31–33</sup>.

**Problem – Disruption in regular exercise:** Given national requirements of shelter-in-place and social distancing, many youth have experienced a disruption in typical extracurricular activities, sports, access to outdoor space, and daily exercise. This disruption is expected to persist through the upcoming academic school year.

**Solution:** Exercising daily can help children and youth maintain structure and good overall mental and physical health<sup>15, 34</sup>. While exercise has not been studied specifically in pediatric

headache, studies in adults have demonstrated benefit of physical activity in headache management<sup>30, 35</sup>. Consideration of a reward system for daily/weekly activity or encouraging children to work out “with” friends by phone or video can help increase motivation. Involving youth in identifying activities of interest may also increase engagement in physical exercise. Specific suggestions are available:

- <https://www.healthychildren.org/English/health-issues/conditions/COVID-19/Pages/Getting-Children-and-Teens-Outside-While-Social-Distancing.aspx>
- <https://www.nytimes.com/wirecutter/blog/best-kids-exercise-videos/>

**Problem – Prolonged sitting:** Online classes may result in prolonged sitting and increased time using technology, which have been shown to have negative impacts to posture, neck pain and headaches<sup>31–33</sup>.

**Solution:** Neutral positioning while completing school work can help improve posture and reduce neck pain<sup>31, 32, 36</sup>. A simple way to optimize ergonomics is to sit at a table with a chair rather than working on a bed or couch. Computer screen heights can be brought to eye level by elevating the monitor or the child’s seat with books. Holding books or small electronic devices at eye level with elbow support or propping them up is also recommended. Frequent position changes and scheduled movement breaks throughout the day are key. Interventions focused on the cervical spine and shoulder girdle can have a positive effect on headaches<sup>37</sup>(See Appendix I).

**Problem – Carrying a heavy load:** Requirements for individualized school supplies and hybrid learning models may require students to carry increased materials to and from school. Carrying a backpack promotes forward head position and activation of sternocleidomastoid and upper trapezius<sup>38</sup> postures known to influence headaches<sup>39–43</sup>.

**Solution:** Students should only carry essential items in their backpacks and place heavier items (such as textbooks) closer to their backs to reduce orthopedic stress<sup>44</sup>. Students should reduce time carrying backpacks and use assigned lockers or desk space to house supplies, as a recent study found wear time, not relative weight, as the significant contributor of postural pain<sup>45</sup>.

### Relaxation and Stress Management:

Pandemic-related societal changes have had a direct psychosocial impact on the wellbeing of children<sup>46, 47</sup> and can exacerbate headache via numerous mechanisms.

**Problem – Decreased boundaries between home and school.**—Many activities that previously took place outside of the home (e.g., socialization, academics) now take place online. This can create difficulties with identifying and maintaining healthy boundaries and contribute to feelings of burn out.

**Solution:** Children and caregivers are recommended to identify a structured day including consistent sleep/wake time, exercise, hydration, meals, and relaxation, as well as class and homework time with specific goals to maintain boundaries throughout weekdays and

disconnect more on the weekends. Caregivers are encouraged to identify regular socialization opportunities (e.g., video chat; outdoor socially-distanced peer activities). To create boundaries with social media use, families may set notifications on mobile phones for prolonged time on social media.

**Problem – Increased mental health concerns.**—Uncertainty, coupled with the influx of constant news and social media, may increase anxiety and worsen headache<sup>48, 49</sup>. Manifestations of anxiety in youth can present as externalizing behavior (i.e., acting out, arguing), worry, panic and/or increased somatic complaints<sup>50</sup>. Depressive symptoms are likely to arise with social isolation, uncertainty about the future, concerns for family members' health, and financial hardships resulting from increases in unemployment and job insecurity due to the pandemic<sup>51</sup>. Indeed, research in China<sup>52</sup>, Italy and Spain<sup>53</sup> has found higher rates of mental health concerns in children following onset of the pandemic.

**Solution:** It is important that caregivers provide space for children to share their concerns and worries. Simultaneously, it is recommended families balance the need to stay informed with engagement in non-COVID-19 related thoughts/conversations<sup>54</sup>. Spending time with family and working on schoolwork was found to be related to lower depressive symptoms in a recent study of adolescents during the COVID-19 crisis<sup>55</sup>. To facilitate social learning experiences some families plan to supplement virtual learning with in person “learning pods” with a paid tutor. Though this option is likely out of reach for many families, it may be possible to create virtual or distanced in-person study groups or social time.

The use of relaxation strategies (e.g., diaphragmatic breathing, progressive muscle relaxation, guided imagery) are evidenced to be effective for headache prevention and stress management<sup>56</sup>. Mindfulness strategies have also been found to decrease disability and symptom impact among children with chronic pain<sup>57</sup>. Children are encouraged integrate these strategies into their day, and can consider accessing various mobile applications for guided exercises and motivation to stay consistent with these practices. Studies have demonstrated patient acceptance of mobile app interventions<sup>58</sup>, but have not tested efficacy of the publicly available apps. In our clinical practice we have recommended the following - *Stop, Breathe and Think, Headspace, Calm, and Relax Melodies* – though this list is not exhaustive. Please see the below tables with more specific clinical suggestions on how children with headaches (Table 2) and their caregivers (Table 3) can support emotional health during the transition back to school<sup>59</sup>. Again, many of these are based on expert opinion, but evidence is cited where available.

**Problem – Social difficulties and worries with returning to in-person school.**—Some children have significant social concerns related to school (e.g., bullying, social anxiety), and endorsed increased emotional comfort secondary to shelter-in-place orders. After prolonged absence, these children may experience increased anxiety with the return to in-person school, exacerbating headache. It is also expected that symptoms of anxiety may arise from changes in school environment secondary to COVID-19 (e.g., physically distanced desks, fear of exposure to the virus).

**Solution:** Gently but persistently inquire as to these challenges with the child without judgement. Help children identify specific fears about returning to school. Focus on listening, rather than offering advice and trust what the child says. Involve the child in any choices made to address the problem (e.g., informing teachers or school administration). Encourage children and their parents to practice challenging situations they are likely to encounter, create a list of phrases that they can use, and identify an ally at school. Consider using the Pediatric Migraine Action Plan<sup>60</sup> for school, and writing in specific accommodations for this year. For children with frequent and very disabling headaches see Appendix II for a suggested 504 request letter template.

**Problem – Adverse Childhood Experiences (ACEs):** In times of stress and uncertainty, parent-child relationships can face strain due to increased proximity and conflict or experiences of caregiving fatigue<sup>61</sup>. Increases in harsh parenting tend to accompany times of economic distress<sup>62</sup> and increased time at home may further exacerbate the issue, leading to increased violence in the home. Simultaneously, in-person access to mandated reporters (schools and medical offices) is decreased<sup>63</sup> which in turn can lead to prolonged exposure to adverse childhood experiences (ACEs; physical/emotional/sexual abuse and neglect, exposure to mental illness in household, witnessing domestic violence, divorce, substance-abuse). ACE exposure has been found to contribute to frequent headache<sup>64</sup> and learning difficulties<sup>65</sup>. Increased ACEs and their negative effects on neurological outcomes also contribute to disparities in health, as communities of color often carry disproportionately higher burdens of ACE exposure and trauma<sup>66</sup>.

**Solution:** Ensure appropriate questions are asked during medical visits to help screen for ACEs and provide resources to families. The Centers for Disease Control and Prevention (CDC) provides resources for both children and parents on the Coronavirus Disease 2019 website<sup>67</sup> and the American Academy of Pediatrics released guidance on effective parenting while dealing with stress of the pandemic<sup>68</sup>. Multiple ACE screeners are also available online<sup>69,70</sup>. One simple question to incorporate in every medical appointment is, “Do you feel safe in the home?” Discussing methods of maintaining confidentiality at the start of a telehealth appointment (e.g., using headphones, ensuring doors are closed) may reduce fears of honest disclosure.

#### **Trigger Avoidance:**

Many common triggers such as dehydration, fasting, sleep problems, and stressors were discussed above. Here we highlight screen use and mask wearing as potential additional school-related triggers.

**Screen Use:** Virtual learning has increased reliance on computer screens, which can create visual discomfort and is thought to trigger or exacerbate headaches due to prolonged screen exposure. While evidence for this is limited, increased exposure to screens (including smartphones, tablets, computers, and television) has been associated with higher risk of migraine in adolescents and young adults<sup>69</sup>. This presents potential challenges to managing headache and promoting healthy sleep habits.



**Problem – Screens cause eye strain and dry eyes:** Frequent computer use can cause eye strain, eye fatigue, irritation, redness, blurry vision, and double vision<sup>70</sup>. Dry eye appears to be the most significant contributor to these symptoms<sup>70</sup>, and is particularly prevalent in individuals with chronic migraine<sup>71, 72</sup>.

**Solution:** The use of artificial tears can be used to combat dry eye. In addition, regular practice of yoga has been associated with reduced visual discomfort from computer screens<sup>73</sup>.

**Problem – Brightness from screens:** Computer screens are thought to both trigger and exacerbate migraine attacks, though there is only limited evidence showing correlation between increased screen time and risk of migraine<sup>69</sup>.

**Solutions:** We recommend striking a balance between reducing visual triggers and gradual exposure to make viewing more tolerable over time.

- *Planned exposure* to screens may increase tolerance over time. Bright flickering light causes visual disturbance and head pain in individuals with regular headaches. However, these symptoms were reduced with prolonged exposure (>30 minutes) to the same bright flickering light<sup>74</sup>. Indeed, strategies that involve learning to cope with triggers (including visual triggers) have shown promise in reducing headache frequency<sup>75</sup>. One approach includes taking breaks from screen exposure just before headache usually starts to develop, and gradually increasing the amount of time spent continuously at the computer<sup>76</sup>. Focusing on an object greater than 20 feet away about every 30 minutes is thought to reduce eye strain by taking a break from viewing close objects like a computer screen<sup>77</sup>. Additionally, providing paper options for reading or assignments when possible may be beneficial.
- *Work area lighting:* Having a similar level of brightness across visual space may improve visual comfort. This includes reducing exposure to intense florescent lights, and excessive window lighting<sup>70</sup>.
- *Monitor refresh rate:* Certain flicker frequencies especially in the 10–30 Hz range can be particularly uncomfortable to individuals with migraine<sup>78</sup>. While evidence is quite limited, selecting a monitor with a higher refresh rate when possible may be helpful.
- *Light filtering glasses and computer screen covers:* When prolonged screen use is unavoidable, methods that reduce exposure to certain wavelengths of light may be helpful. Options to filter light from computer screens include tinted glasses, physical filters that cover computer screens, and altering the display. While the evidence is mixed, it is reasonable to use these filters if they are perceived to be helpful.
  - Blue light blocking filters have a positive impact on sleep and counteract the melatonin suppression triggered by LED screens, especially when used 2 hours before bed<sup>79, 80</sup>, and can improve eye-



fatigue and dryness<sup>79</sup>. However, at least one study did not find a reduction in migraine attack frequency<sup>81</sup>.

- Tinted glasses with different color filters selected based on individual preferences reduced glare<sup>82, 83</sup> and showed decreased visual cortical response on fMRI<sup>84</sup> in subjects with migraine. Another study showed rose tinted, but not blue tinted glasses, reduced migraine frequency in children<sup>85</sup>.
- It has been reported that exposure to green light can be less exacerbating to individuals experiencing migraine<sup>86</sup>.
- Some computers and tablets also have night display settings that shift colors to longer wavelength light (i.e. warmer colors) that is thought to be more visually comfortable<sup>77</sup> and has been shown to reduce computer-related eye strain<sup>79</sup>.

**Mask-related headaches:** Can wearing a mask cause headaches? Theoretically, the answer is “yes”, but in practice, it is unlikely to do so.

**Problem: Pressure created by the mask or its straps against various contact points on the face or scalp could trigger headache.:** This issue was highlighted in a recent study of health care workers in Singapore who were required to wear N95 masks for approximately 6 hours a day. Over one month, 81% had experienced new headaches<sup>87</sup>. The location of their pain closely mirrored the mask’s contact points at the nasal bridge and cheeks as well as strap’s contact against the temples and the back of the head. Those wearing masks for longer than 4 hours a day and those with pre-existing primary headache disorders were more likely to experience mask-related headache than their peers.

**Solution:** The cloth or surgical masks most commonly worn are looser-fitting than N95 masks and typically secured behind the ears, which should not produce the same degree of pressure against the face and scalp, and are therefore less likely to trigger headaches. Youth who find ear loops uncomfortable could try wearing a mask extender or a cloth headband with a button around which to fasten the ear loops. Alternately, try a mask which can be tied at the back of the head at a higher or lower position for comfort.

## Hopeful Prospects of the COVID-19 Pandemic

The COVID-19 pandemic has transformed the world and touched every aspect of daily life. As highlighted in this article, there are countless domains in which the novel virus has negatively impacted schools and children, including those with headache disorders. However, the impact on students varies widely depending on a number of external and internal factors, and there may be some “silver linings.”

*At a societal level*, the COVID-19 pandemic has drawn attention to disparities in education for children and adolescents based on race, geography, and socioeconomic status that have been left unaddressed for far too long. *At a family unit level*, with caregivers taking on the role of teacher, appreciation of the strengths and weaknesses of their child’s scholastic

achievement, socialization and resiliency may be more apparent. *On an individual level*, for youth who excelled or experienced a reduction in headache during this time, it will be a matter of understanding what changes fostered positive outcomes<sup>88</sup>. For example, some schools may learn to tailor the school environment and educational format to better suit that child's needs (e.g., provide more flexibility to allow for breaks, meals, hydration, sleep; more one-on-one learning, self-paced learning) and some students and families may advocate for access to needed supports (e.g., school counselors to help intervene with bullying or teach strategies to manage social anxiety and school stress).

As many crises have done before, perhaps the difficulties and struggles central to families' current experiences will build resilience in youth, and highlight paths to long-term, positive change.

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## Appendix I



Illustration demonstrating an ergonomic student workspace at home with neutral spine.

When using smaller electronic devices limit prolonged cervical flexion by raising the objects up closer to eye level while maintaining a neutral spine.



**Atlanto-Occipital Nods in Seated (left):**  
*Complete throughout the day as a gentle postural reset.*  
 seated in supportive chair with upright posture and neutral spine. Gently rotate just your head down like you are nodding “yes”. Relax and return to starting position.



**Bilateral Shoulder External Rotation (right):**  
*Complete throughout the day to improve postural awareness.*  
 While seated or standing, bend both elbows to 90 degrees, palms facing up. Gently move hands out to the sides while keeping elbows in contact with the body. Only move within available/comfortable range. Return to starting position.

**Appendix II:**

Accommodations Letter (adapted from UCSF Child & Adolescent Headache Program)

To Whom It May Concern:

[Patient Name] is a patient at [Institution/Primary Care Practice] and is under our care for [Headache Diagnosis].

[Headache Diagnosis] can be debilitating, interfering with academics, socialization, mood, and overall functioning. The interactive effect of impairments associated with headache and disruptions in typical socialization, enjoyed activities, and academics due to the COVID-19 pandemic may contribute to difficulties with adjustment, mood, and overall coping.

We understand that children will be engaging in different models of education this year and encourage consideration of specific accommodations to help support our patients with headaches as they return to school. We continue to encourage our patients to maintain a healthy lifestyle with good hydration, sleep, exercise, regular meals and coping strategies for stress/headache management and emphasize the importance of continued functioning despite symptoms.

We recommend a 504 plan to establish appropriate accommodations to maximize learning opportunities for [Patient Name]:

1. **School Accommodations Point Person:** We recommend that [Patient Name] have a point person at school to support [her/him] in refining [her/his] school accommodation plan and communicating with teachers and school staff members throughout the year.

[Patient Name] would benefit from regular check-ins with this point person to help [her/him] stay on-task with required assignments and problem solve any barriers to the below plan.

2. **Breaks:** Please allow [Patient Name] to take breaks as needed both for optimal management of [her/his] headache disorder.

3. **Absences:** We encourage daily school attendance. However, please excuse rare absences due to headaches. Similarly, if [Patient Name] is unable to attend for the full day due to headache, please excuse late arrival or early dismissal. We have instructed [Patient Name] to contact our office if [she/he] misses school frequently.
4. **Assignments:** Please allow extra time to complete assignments and exams, as productivity can be greatly reduced during headache. When possible, please give [Patient Name] assignments one week beforehand so that [she/he] can work on them when headaches are less disabling.
5. **Schedule:** For [her/his] age group, 8–10 hours a night of sleep are recommended. The American Academy of Pediatrics recommends that high schools begin no earlier than 8:30 AM, in recognition of adolescents' physiologic tendency to go to bed later and wake later than younger children. I recommend scheduling [her/his] first period class as either an empty slot, or a course that can be flexibly attended (such as an art class). Adequate sleep is essential to headache management.

Sleep duration recommendations from the American Academy of Sleep Medicine (2016):

Children 3 to 5 years old: 10–13 hours

Children 6 to 12 years old: 9–12 hours

Teenagers 13–18 years old: 8–10 hours

6. **Privacy:** While [Patient Name]'s family is comfortable with teachers and relevant school personnel knowing about [her/his] condition, we appreciate your keeping [her/his] medical information confidential.
7. **Accommodations Specific to Remote Learning:** Prolonged screen time can provoke or worsen a migraine headache. In general, we recommend limiting the time [Patient Name] is required to be on [her/his] screen to the greatest extent possible.
  - i. **Alternate assignments:** When possible, please provide materials that can be shifted to a paper format as opposed to electronically. For example, completing homework assignments on paper that can then be sent via pdf (if the student has access to a printer) or provided in workbook form. Additionally we recommend considering alternative mechanisms to earn course credit to minimize screen time.
  - ii. **Recording lessons:** As concentration may be challenging during headache, consider recording live lessons or allowing [Patient Name] to record the lesson so [she/he] can go back to watch what [she/he] may have missed at a later time.
  - iii. **Breaks from screens:** Please allow frequent breaks from screens.

- a. Please allow [Patient Name] to **turn the screen off**, if desired, and allow for audio only.
  - b. Please allow [Patient Name] to **turn off the camera**, if desired, to allow [her/him] to dim [her/his] lights or not look at the screen as needed.
  - c. Allow use of **audiobooks or text-to-speech** technology to help minimize time on the screen.
- iv. **Communication:** As communicating while distance learning can be challenging, please support [Patient Name] in developing a system to help ease regular communication (e.g. regular email to check-in, chat function to ask questions, ‘office hours’ for students to ask questions).
8. Accommodations Specific to In-Person Classroom Learning
- i. **Hydration:** Please allow [Patient Name] to keep a water bottle with [her/him] in the classroom or set up a plan where [she/he] can easily step away from [her/his] classmates to drink water at an appropriate distance. Please also allow trips to the bathroom as needed, without restriction.
  - ii. **Snacks:** Please allow [Patient Name] access to snacks at school. Please support [Patient Name] in setting up a plan where [she/he] can easily step away from [her/his] classmates to have a snack at an appropriate distance.
  - iii. **Medication:** At onset or worsening of headache- please allow [Patient Name] to take [her/his] acute medications and rest in a safe and quiet area at the nurse’s office, or a supervised equivalent.
  - iv. **Environment:** Headaches can be exacerbated by movement, overheating, dehydration, light, sounds, and smell.
    - a. [Patient Name] should exercise regularly, but may need modifications to Physical Education class to avoid headache flares during the school day. Please allow [her/him] to participate in physical activities as [she/he] is able, and allow rest/hydration as needed.
    - b. Please allow [her/him] to be in settings/conditions as needed that can minimize bright lights, sounds, and smells. Please allow [her/him] to take breaks as needed in such a location.
9. Other accommodations to be discussed by [Patient Name], [her/his] family, and the school.

We sincerely appreciate your understanding and assistance in optimizing [Patient Name]’s attendance and performance in school related activities with an appropriate regard for [Patient Name]’s diagnosis, especially during this challenging time.

Ongoing communication between the school, family, and medical team is vital to ensuring [Patient Name]’s success in these efforts. Please feel free to reach out to our office with any questions you may have.

Sincerely,

[Treating Clinician]

[Institution/Primary Care Practice]

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**Table 1.**

Sleep Recommendations for Virtual Learning for Children with Migraine

Domain	Encourage patients to:
Schedule	Develop and maintain a consistent bedtime routine and avoid daytime napping to prevent disruptions to the sleep-wake cycle <sup>89</sup>
Environment	(A) Use bed <i>only</i> for sleep to strengthen the sleep-bed connection. Find a separate space for schoolwork to avoid worsening head and neck pain <sup>90</sup> . (B) Sleep when it is dark to ensure optimal pineal gland function (C) Turn off screens at least 1–2 hours before bed to limit blue light exposure <sup>91</sup>
Health Behaviors	(A) Avoid caffeine and simple sugars that impair sleep onset, especially in the hours before bed <sup>89</sup> (B) Have a healthful snack 2 hours before bedtime (C) Exercise regularly during the day to improve sleep onset and maintenance.
Nutraceuticals	Consider use of nutraceuticals such as Melatonin <sup>92, 93</sup> and Magnesium <sup>94, 95</sup> to optimize sleep and migraine prevention when needed.

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**Table 2**

Guidance for Children with Headaches to Support Emotional Health and Minimize Stress as a Headache Trigger during COVID-19 Pandemic

Domain	Encourage Children to:
Structure	(A) Maintain a consistent schedule with sleep/wake time, good sleep hygiene, healthy eating habits (not skipping meals), daily exercise and good hydration <sup>96</sup> (See Gelfand “Lifestyle Advice” for discussion <sup>34</sup> ). Write this schedule down or design a “reward system” for adherence. (B) When possible, set up a workspace that is free of clutter or distractions, maximizing focus and concentration <sup>97</sup> . This could be a desk or a table but not the bed, which should only be used for sleep. (C) Pacing is important. Maintain a daily structure including both activities and academic work that feels manageable irrespective of headache. Take breaks as needed <sup>98</sup> .
Positive Activities	(A) Schedule safe, enjoyable social and/or solo activities daily <sup>99</sup> . (B) Consider engaging in a new activity or learning a new skill (e.g., an art project, a podcast, an interesting online course, a new language). See also <a href="https://ppainsig.weebly.com/clinical.html">https://ppainsig.weebly.com/clinical.html</a> (C) Stick to plans even if motivation is low. Engaging in enjoyed activities even on a bad day can help boost mood.

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**Table 3**

Guidance for Caregivers of Children with Headaches to Support Emotional Health and Minimize Stress as a Headache Trigger during COVID-19 Pandemic

Domain	Caregivers are encouraged to:
Engage in Parental Self Care	Identify the areas in which the <i>caregiver her/himself</i> may be struggling with the pandemic (e.g., anxiety, social isolation). Engage in “coping behaviors” (e.g., exercising, journaling, taking deep breaths) and seek support as needed. <i>Children can be affected by parental stress.</i>
Model Emotional and Physical Health Behaviors	(A) Discuss the above coping mechanisms with children to demonstrate the value of self-care. (B) Model social distancing, wearing a mask, and washing hands in a calm and consistent manner.
Provide Emotional Support	(A) Normalize and validate the child’s experience while encouraging open communication regarding thoughts, feelings and worries with returning to school <sup>50</sup> . Pair empathy with encouragement: “I know this is scary, and I know you can do it!” (B) Help the child identify a “menu” of coping skills (e.g., 10 deep breaths, drawing, taking a short mask or water/snack break at school). (C) Explain the specific changes in school (e.g., wearing masks, limiting time in school) and the impact your child has on maintaining safety for her/his peers, staff and their families to create a sense of empowerment. (D) Support the child in gradually engaging in anxiety provoking activities to help them habituate, or become used to, the activities (e.g., wearing masks around the home while engaging in enjoyed activities) <sup>100</sup> .
Create Structure	(A) Consider ways to organize the child’s daily and weekly school responsibilities to remain caught up on schoolwork and minimize the potential of increased stress that could trigger a headache attack and/or interfere with sleep schedule and mood. (B) Discuss details of the school’s current plan (e.g., schedule for online coursework) and secondary plan (e.g., what a planned hybrid model might look like). (C) Create a “COVID Kit” of materials that will help the child at school (e.g., an extra mask, extra pens, hand sanitizer). (D) Develop a plan for quarantine procedures in the event of exposure. Where will your child stay? How will they receive meals and medical care in this time?
Advocate with School	(A) Connect with the school community and identify specific school staff that the child can contact should they experience a migraine attack or need extra support. (B) Consider requesting a meeting with identified teachers, school counselor and nurse to discuss a medical plan and supports for your child. (C) For children with existing 504 or IEP plans, place a request to the school in writing to modify accommodations to the current school environment. <b>Special education laws and regulations are not waived during the pandemic</b> <sup>101</sup> .
Seek Support	(A) Remind the child that experiencing anxiety at this time is normal and expected. Worries about exposure to the virus or getting others sick can help motivate protective behaviors (wearing a mask, washing hands). (B) If these behaviors and worries begin to interfere with typical functioning, contact a behavioral health provider for increased support.