





**Migraine** is a disabling and chronic disease characterized by unpredictable, incapacitating, and painful episodic attacks. These attacks are characterized by moderate to severe headache, typically on one side of the head, that lasts 4 to 72 hours and can be accompanied by nausea and/or vomiting, sensitivity to light or sound, or other symptoms.<sup>1</sup> Migraine symptoms can prevent people with the condition from functioning normally and can significantly impair their personal and work lives.

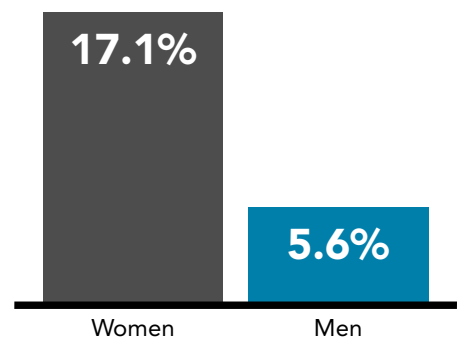
Migraine-related workplace impairment exposes employers to the direct costs of employees' migraine-associated healthcare, including physician visits, inpatient and outpatient medical care, and pharmacy costs. Additionally, employers are impacted by the indirect costs of lost employee productivity, primarily diminished on-the-job performance known as presenteeism, in addition to absenteeism.

**What can be done?** Employers clearly have a vested interest in helping employees with migraine manage their condition. One of the ways they can help this group of employees is by providing an employee migraine education program that empowers employees with information to better manage their migraine and is responsive to the needs and concerns of employees in the COVID environment of today. A **virtual employee migraine education program** is conveniently accessible to all employees at all worksite locations and to those who work from home. The **Metro Nashville Public School System** has employed this strategy, and their 100% virtual program is the subject of this case study.\*

## Migraine Quick Facts

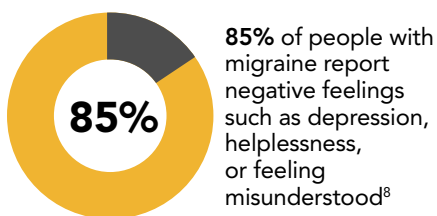
- Migraine is the second most debilitating disease worldwide.<sup>2</sup>
- Migraine is most prevalent among people ages 30 to 49.<sup>3</sup>
- Approximately 75% of migraine patients are not accurately diagnosed.<sup>4</sup>
- In their lifetime, 24% of people with migraine will seek treatment for their condition at an Emergency Department.<sup>5</sup>
- More than 90% of people with migraine report that migraine interferes with education, career, or social activities.<sup>6</sup>
- Some women who have experienced both childbirth and migraine ranked migraine pain greater.<sup>7</sup>

## Migraine Prevalence in U.S.<sup>9,†</sup>

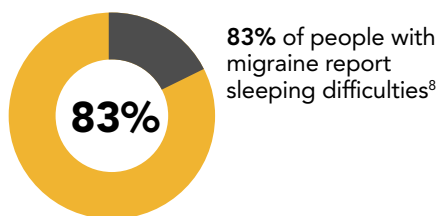


†Among 162,576 survey respondents ages 12 years and older.<sup>9</sup>

### Migraine and Depression



### Migraine and Sleeping Difficulties



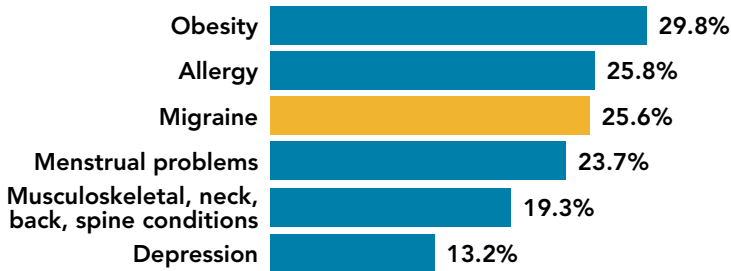
\*AbbVie thanks the Metro Nashville Public School System for its collaboration and permission to feature its virtual migraine education program in this case study.

## Migraine Prevalence in the Workplace

People with migraine do not leave their migraine at home when they go to work. At their place of work is where the disorder can lurk unnoticed by many employers, disrupting lives and impacting the bottom line. As one workplace migraine expert has written: *"Because migraine is often under-recognized, under-diagnosed, and under-treated, it poses a potentially large economic burden to employers."*<sup>10</sup>

Probably surprising to most employers, migraine may be their third most prevalent workforce health condition. The chart below puts migraine prevalence in context of other workforce disorders.<sup>11</sup>

### Percentage of workers with:

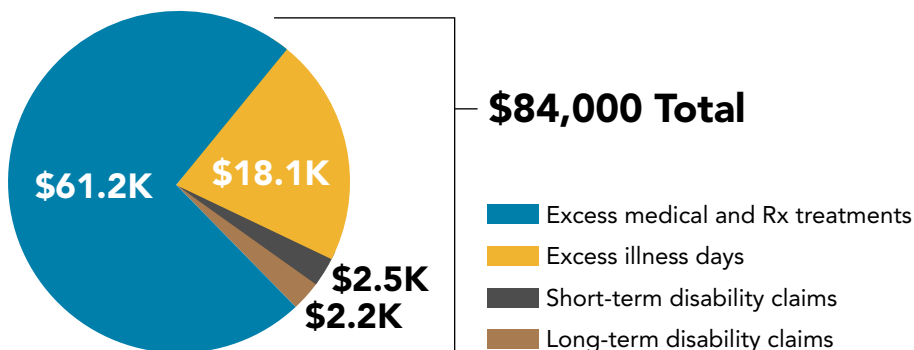


One of the reasons why migraine has relatively high prevalence in the working population may be explained by the way the prevalence of the condition varies by age. Migraine is most common among people ages 30 to 49,<sup>3</sup> which coincides with the age range of many workers in the U.S. workforce.

## Excess Costs of Migraine in the Workplace

Employers bear the burden of employees' migraine-related healthcare, disability, and lost productivity costs. The magnitude of some of these costs is presented in the chart below, which shows that for the 4 categories of costs analyzed, employers will pay \$84,000 per 1,000 employees per year in excess migraine-related costs.<sup>12</sup>

### Example Excess Costs of Migraine to Employers (1,000 workers/year)



### Migraine and Presenteeism

The chart above does not include the costs of migraine-related presenteeism, which can be substantial. Analysis of the work performance of people with migraine has found that they may lose up to 29% of their annual on-the-job productivity due to their condition.<sup>11</sup> Putting a spotlight on this often overlooked migraine cost, one migraine expert has written *"Presenteeism is the unappreciated 'dark matter' of migraine burden."*<sup>13</sup>

## About Metro Nashville Public Schools

Metro Nashville Public Schools (MNPS) is the school district in Nashville, Tennessee, that covers the City of Nashville and Davidson County, the county in which it is located. Approximately 82,000 students are enrolled in MNPS's 159 schools, and there are approximately 6,500 teaching staff and 3,800 support staff.

The health plan that covers the MNPS teaching staff, Teachers Health Plan, is progressive in its approach to helping teachers protect and manage their own health. MNPS sponsors five primary care clinics within the district that provide a broad array of preventive health services at low or no cost to employees. These clinics are operated by Vanderbilt Health, a healthcare provider program of Vanderbilt University Medical Center. Helping teachers with their conditions, or preventing those conditions from developing, is a high priority for the Teachers Health Plan. The plan has a history of offering health condition education and health condition management programs to teachers, and has recently experimented with digital health offerings, partly because of their anytime, anywhere accessibility.



## Overview of Virtual Employee Migraine Education Program at MNPS

Prior to 2019, Teachers Health Plan was aware of migraine among its teachers but had not taken action on the condition. Then the COVID pandemic struck in 2020, which created more impetus for a migraine education program. Teachers were placed in a very stressful situation of providing virtual schooling for the first time while managing/worrying about their own health and that of their families (notably, stressful situations in and of themselves can be a migraine trigger).

Concerned about the health and well-being of its teachers, Teachers Health Plan and Dr. Martha Shepherd (Medical Director of Vanderbilt Health at MNPS) sought out, vetted, and modified an employee migraine education program that could be delivered virtually.\* The migraine program sponsored by Teachers Health Plan consisted of videos, webinars, and program handout materials.

\*The migraine education program that served as the foundation of the MNPS program is available from Migraine at Work ([migraineatwork.org](http://migraineatwork.org)), which is sponsored in part by AbbVie.

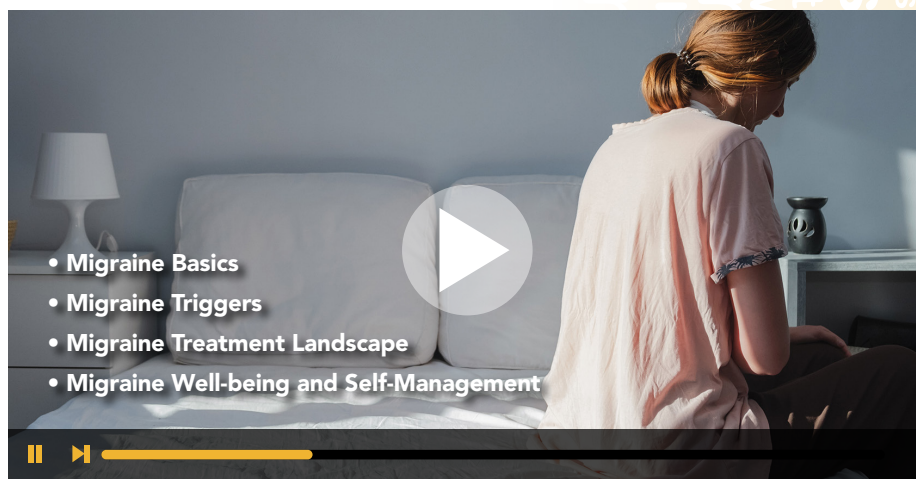
The 90-day program was launched in September 2020 when email invitations for the program were sent to all Teachers Health Plan enrollees. After registration, and before they started the program, participants were invited to complete a questionnaire about their migraine and its effects on their personal and work life. Participants were then invited to repeat the questionnaire at the conclusion of the program. It should be noted that registration in the program was open to any invitee, ie, there was no screening for a previous migraine diagnosis by a healthcare provider.

## The MNPS Virtual Migraine Education Program

The major elements of the migraine program implemented at MNPS are summarized below.

### Program Videos

The foundation of the program were four individual intranet-based videos on essential migraine topics as identified in the image to the right. These 10- to 12-minute videos were presented by physician and PhD migraine experts and could be viewed at any time by program participants. At certain points in the videos, viewers could download handouts on the material being discussed via hyperlinks.



### Program Webinars

The program also featured two live webinars (also recorded for on-demand viewing) with a headache specialist/neurologist who discussed the educational videos and provided additional migraine information based on his migraine practice experience. Both webinars also provided opportunities for participants to ask their migraine questions of the headache specialist/neurologist.



## Virtual Migraine Education Program Results<sup>10</sup>

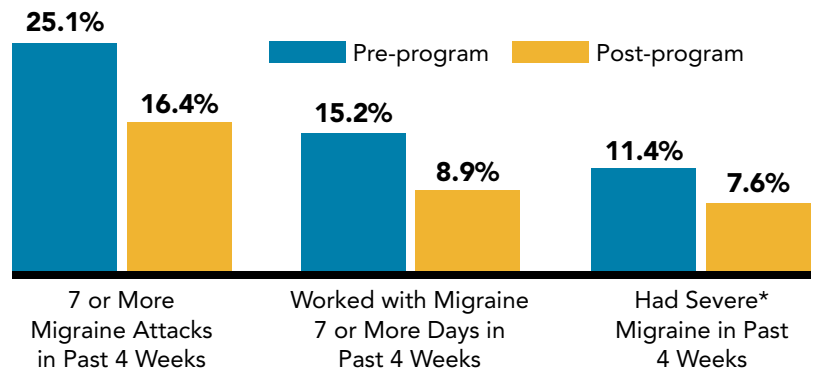
The program also included a pre- and post-program survey. In addition to demographics, the baseline and post-program questionnaire asked about the triggers, frequency, and severity of the program participants' migraine. It also asked whether and how the survey respondent treated their migraine disease and the impact of the condition on their functioning at work. Both pre- and post-program surveys were completed by 36% of program participants (n=79).

## Decrease in Migraine Frequency and Severity<sup>10</sup>

Per the chart to the right, program participants reported significant decreases in the frequency of migraine attacks, days worked with migraine, and frequency of severe migraine attacks.

The researchers commented that *“These results show promising impacts associated with the migraine education program.”*

### Characteristics of Program Participants’ Migraine



\*“Severe” defined as being 9-10 on a 10-point scale of migraine attack severity.



## Lost Productivity and Presenteeism<sup>10</sup>

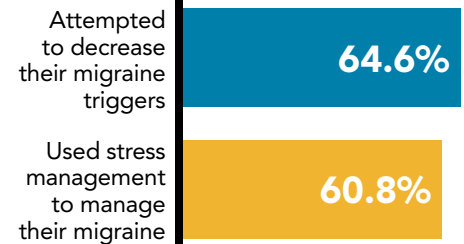
The survey findings concerning productivity and presenteeism included the following:

- Pre- and post-program, participants were asked *“In the past two weeks, how much of the time did your physical health or emotional problems make it difficult for you to do the following?”*<sup>10</sup> The items asked about included concentrating on the job while at work and ability to handle the workload. Pre-program, all participants reported losing **9.1%** of productivity due to physical health or emotional problems. Post-program, this percentage decreased to **7.7%**.
- Pre-program, **69.6%** of participants reported themselves as being: not effective or only 25% effective or only 50% effective at work while having a migraine. Post-program, the comparable percentage decreased to **58.2%**.



## Impact of Program on Migraine Self-Care<sup>10</sup>

In the post-program survey, participants were asked about any changes they had made to better manage their migraine based on what they had learned in the program. One finding was that **12.7%** of participants consulted a physician about their migraine. The graphic to the right presents other changes reported by program participants.



## Medication Use<sup>10</sup>

People with migraine often use a “toolbox” of over-the-counter medications as well as prescription medications that abort or prevent migraine attacks.

- Rx's for acute treatment of migraine attacks: **35.4%** of program participants used these types of drugs pre-program. Post-program, this percentage increased to **40.5%**.
- Rx's for migraine prevention: **29.1%** of program participants used these types of drugs pre-program. Post-program, this percentage decreased to **25.3%**.

Regarding program impact on changes in medication usage, one of the researchers has stated: *“The changes in the patterns of migraine medication are hard to interpret, but then it was a relatively short 3-month program. Research over a longer period of time would probably be required to get a better understanding of program impact on medication usage.”* (David Hines, oral communication, December 2021.)

## Employer Leaders Comment on the MNPS Migraine Program



### David Hines

Executive Director, Employee Benefits, Metro Nashville Public Schools

**Program genesis.** *"I became aware of the program through Dr. Burton, who I kept running into at professional meetings. His description convinced me it was something I needed to take a look at for our population. I liked what I saw, so I then passed along the program to Dr. Shepherd for evaluation."*

**Virtual program delivery.** *"It would have been virtual even without COVID because of the more than 140 different worksites we have. It was clear, virtual was the way to go."*

**Program success.** *"Participation was good. We're very pleased with the uptake and overall response. It moved the dial on migraine. We're very pleased."*

**Program surprise.** *"Pleasantly surprised that a behavioral-based approach impacted our population."*

**Pharmacy benefit manager (PBM) alignment.** *"We were able to use our PBM's formulary, which covers both the newer acute and preventive medications."*



### Martha E. Shepherd, DO, MPH, FAAFP

Medical Director, Vanderbilt Health at Metro Nashville Public Schools

Assistant Professor of Clinical Medicine and Pediatrics, Vanderbilt University Medical Center

**Note:** Dr. Shepherd led the effort to design and implement the virtual migraine program for MNPS teachers.

**Biggest takeaway from program.** *"More need and interest in migraine education than we realized. Bigger response than we expected, even for the webinar with the neurologist. We've posted the webinar on the program website and it continues to be watched. Also surprising that participants had as much interest in lifestyle changes as they did medications to manage migraine."*

**Empowered migraine patients.** *"Program participants learned the questions they should be asking their healthcare provider about their condition."*

**Provider training needs.** *"Wish we had more time to train our clinic providers on migraine diagnosis, prevention, and treatment as well as the new medications for preventing migraine."*



### Wayne N. Burton, MD, FACP, FACOEM

Associate Clinical Professor of Medicine, Feinberg School of Medicine, Northwestern University

Editor, *International Journal of Health and Productivity*

**Note:** Dr. Burton advised MNPS and Teachers Health Plan during the design and implementation of the virtual migraine program. Subsequently, he was the lead author of the *Journal of Occupational and Environmental Medicine* article about the program.<sup>10</sup>

**Effective custom program.** *"Even before the COVID pandemic was fully established, the school district was concerned about the amount of time the teachers would be able to spend on the program. We developed an abbreviated program that worked. The results were similar to the much more robust programs I have implemented previously for other employee populations."*

**Value of the program.** *"The program was conducted in the eye of the storm of COVID with success."*

**Migraine medications.** *"It's a new ballgame ... 15-20 years ago there were only acute medications, like triptans. Now we have new treatment options, such as CGRP [calcitonin gene-related peptide] inhibitors. Formularies need to be open to all kinds of these medications. Medication management for migraine is very individualized, and there should be minimal barriers to access the new acute and preventive medications, such as CGRPs, monoclonal antibodies, and gepants."*

**Opioids for migraine.** *"From the survey we learned that some of the population were taking opioids for their migraine. That was concerning. Experts have stated that opioid medications should rarely be used for treating migraine, and the program reduced the use of these types of medications."*

## Takeaways

1. Because migraine is often under-recognized, under-diagnosed, and under-treated, it imposes a large economic burden on employers.
2. It is important for employers to address migraine because it may be a Top 5 or higher workforce prevalent condition.
3. Participants in the virtual migraine program implemented at MNPS reported:
  - Significant decreases in the frequency of migraine, days worked with migraine, and frequency of severe migraine.
  - Improvements in their on-the-job productivity.
  - Improvements in managing their migraine triggers and using stress management to address their condition.
4. A successful virtual employee migraine education program was provided at MNPS—in “the eye of the storm of COVID.”
5. Foundational employer tools to address migraine in the workplace are available from Migraine at Work ([migraineatwork.org](http://migraineatwork.org)).

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