Needs Assessment and Promotion Plan: A Plan to Implement a Mindfulness Meditation Program at UPMC Western Psychiatric Hospital

by

Lauren Ridge

BS in Public Health, Brigham Young University, 2020

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This essay is submitted

by

Lauren Ridge

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and approved by

Essay Advisor: Carol Greco, PhD
Associate Professor, Department of Psychiatry, School of Medicine, University of Pittsburgh

Essay Reader: Mark Roberts, MD, MPP
Distinguished Professor, Department of Health Policy and Management
School of Public Health, University of Pittsburgh

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Abstract

This essay describes a needs assessment and program plan to address clinician burnout in a hospital setting. This is addressed through the use of mindfulness meditation during regular nurse "huddles." This essay includes a detailed needs assessment in which frontline staff were interviewed about their perceived needs in their perspective clinical settings. The results of this needs assessment were used to design a program plan to be piloted in UPMC Western Psychiatric Hospital. This essay also includes a process evaluation to determine the public health relevance and overall effectiveness of this program.

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1.0 Proposal Summary

Mindfulness meditation has been shown to significantly reduce symptoms of stress and burnout in frontline healthcare workers (Horner et al., 2014). A few programs have even been developed and implemented to help these workers during the COVID-19 pandemic, all of which show promising results (Klatt et al., 2020). A new mindfulness meditation program is expected to be piloted within UPMC Western Psychiatric Hospital (WPH). This hospital was chosen for the pilot following a conversation between program director, L. Ridge, with hospital leadership indicating that their staff were experiencing significant stress and burnout. The program consists of regular mindfulness meditation sessions for nurses. The meditation sessions for nurses will be two minutes each with every session being conducted at the beginning of each day-night shift change.

The first main objective of this intervention is to reduce stress for frontline healthcare workers, using the Brief Nursing Stress Scale (Gauthier et al., 2014; Sansó et al, 2021) to measure stress in nurses and the Professional Fulfillment Index (PFI) (Gauthier et al., 2014; Trockel et al., 2018) to measure levels of burnout in other staff members. The reason for this intervention stems from the UPMC value, “Putting our patients, health plan members, employees, and community at the center of everything we do and creating a model that ensures that every patient gets the right care, in the right way, at the right time, every time.” This intervention is designed to put the employee at the center and help them to get the care they need so that the patient can get the “right care, in the right way, at the right time, every time,” not solely when the employee is feeling slightly less burned out. Because UPMC also values resilience, the use of evidence-informed procedures, and the use of healthy skills to manage workplace stressors, the program is intended

to address each of these by providing healthcare workers the skills needed and plenty of opportunities to practice mindfulness, which has been shown through research to increase resilience and help individuals manage clinician stress (Klatt et al., 2020). Very minimal time is required to implement this proposed change, and this is expected to result in frontline healthcare workers learning and utilizing mindfulness exercises relatively quickly.

This 2-minute meditation program is expected to be implemented at the beginning of the UPMC fiscal year. This is when the project director and lead researcher, L. Ridge, MHA, will schedule meetings with either nurse managers or a nurse leader who volunteers to help. L. Ridge will teach them basic mindfulness practices that they can share in a group setting and introduce them to the free guided meditation app called Insight Timer. Following this hour-long training, the trainees will participate in 2-minute Insight Timer meditations for two weeks to practice and familiarize themselves with mindfulness meditation. They will then begin leading 2-minute meditation exercises with the nurses in their departments at the beginning of every shift, either by leading the meditations themselves or playing a recorded guided meditation from the app on speakerphone for the group to hear.

Among those experiencing high levels of stress and burnout, these levels are expected to be significantly lower following implementation of this pilot than those measured at baseline before implementing this intervention. This will be measured by administering surveys before the intervention, and then quarterly throughout the remainder of the fiscal year.

2.0 Healthcare Workers Mental Health Assessment Profile

2.1 Community Mental Health Assessment

2.1.1 Description of Community Themes and Strengths

In order to identify the current needs of frontline staff, L. Ridge conducted a series of interviews with five UPMC clinicians, including two nurses, one physician, one physician assistant (PA), and one medical assistant. UPMC as an overall organization was examined as opposed to solely WPH because WPH, as a UPMC hospital, uses the same policies and values as other UPMC facilities. Two additional interviews were conducted with clinicians outside of UPMC. Ridge conducted semi-structured interviews with each of the aforementioned individuals using predetermined questions as listed in Appendix A. These questions addressed clinician perceptions of stress within the workplace and resources available to meet the mental health needs of the staff.

A theme that was present throughout all the interviews was that all the interviewees felt safe working for UPMC and that there is a slowly improving sense of community among the healthcare workers there. They agreed that the mental health problem that is most prevalent within each facility is burnout. It is evident that healthcare workers within UPMC are aware of available resources such as group activities and other resources accessible through HR. It was also believed by the interviewees that the strongest network of support is through family relationships followed by friendships within units. One of the strengths of UPMC is that there are available resources for workers who are struggling, and workers are made aware of the self-care tools that are at their disposal. However, even though these resources are present, most healthcare workers are hesitant

to use them because it would require them to set aside time, and most if not all departments are already stretched thin in terms of the amount of staff present each day. Interviewees noted feeling guilty for taking breaks because they worried that they were shifting the burden of patient care to their fellow staff members.

2.1.2 Mental Health Resources and Partners

There are several mental health resources available within WPH to address the mental health needs of frontline healthcare workers, all of which are listed in Appendix B. Although services provided by Workpartners, one of the identified service providers, tends to have favorable results, it costs a significant amount of money for UPMC to provide them for those needing such resources. Free mental health resources are somewhat more accessible, but interviewees remarked that they are underutilized. They range from counseling sessions through Human Resources to "Zen Rooms" with massage equipment and comfortable chairs (Ridge, 2020). The biggest issue is that the majority of these resources require workers to set aside significant amounts of time to utilize them, usually in addition to the everyday work they already have to accomplish.

Within this targeted community, there are several available resources that may improve mental health even though they are not specifically mental health resources. Western Psychiatric Hospital has a garden patio where patients and healthcare workers are welcome to visit, though patients are only allowed to enter the area under supervision and most staff don't come on their breaks when patients are present. UPMC Carlisle reported bringing puppies to the hospital from a local breeder so that the staff could hold and play with them. This appeared to improve the wellbeing of the nurses who participated (Ridge, 2020). In Pittsburgh, there is a conservatory with botanical gardens within a few miles of several UPMC hospitals (Phipps Conservatory and

Botanical Gardens 1 Schenley Park Pittsburgh, PA 15213). This facility is open year-round and garners excellent reviews due to its clean, relaxing environment. Parks are also available in numerous locations, but can be more difficult to access within Pittsburgh due to the foot traffic created by the students at the neighboring University of Pittsburgh.

2.1.3 Mental Health Status and Attitudes Assessment

L. Ridge studied the target population by interviewing frontline healthcare workers both within and outside of UPMC. Thirteen UPMC clinicians were selected and contacted. Two colleagues of Ridge were also selected. Five clinicians outside of UPMC who were personal contacts of Ridge were contacted as well. Of the twenty clinicians contacted, eight individuals in total agreed to participate and were interviewed. They included three nurses, one medical assistant, two PAs, and two physicians. A few participants interviewed lived outside of Pennsylvania and worked with healthcare organizations other than UPMC. The information found in their interview analysis is included because Ridge believed that it was highly relevant to employees at WPH despite it being from other organizations.

Interview analysis revealed that all interviewees viewed stress and burnout as significant problems within their healthcare settings. However, all of them agreed that they felt some degree of connection to their coworkers, with some feeling strongly connected and others less so. Approximately half of those interviewed cited the nursing shortage as one of the key stressors for them in their facilities, with all three nurses interviewed talking about the way the shortage has dramatically affected their work and mental health. All cited a lack of time and feeling guilty taking time off as a significant stressor as well, which has come about as a result of the staff shortage, also being a result of the COVID-19 pandemic. They all wanted to use different tools to

unwind and relax, but they felt that they never had time to do so. Though not always explicitly stated, this was a common theme found in all of the interviews conducted for this proposal.

When asked about their thoughts concerning mindfulness mediation, all of those interviewed expressed interest in having this type of resource available within their units. One nurse voiced that her facility had similar resources available and that she had seen excellent outcomes in her nursing staff since the resources were put in place. However, she added that she definitely wanted to see more within her facility. Some other interviewees said that they tend to practice mindfulness on their own and have found it very helpful as they complete their daily activities.

2.1.4 Forces of Change Assessment

An increased emphasis on job retention is one potential force of change that could affect the outcomes we are currently experiencing. Because so many of these burned-out workers were resigning and leaving their positions, many healthcare facilities, including UPMC, began expanding their job retention efforts. The most common and effective tactics included affordable employee housing, wage increases, appreciation bonuses, academic financial assistance, referral bonuses, relocation costs, longevity bonuses, and “pay on demand” options for nurses to receive their pay the day after their shifts (Plescia and Gooch, 2021). UPMC itself has made progress by altering the traveling nurse program in order to increase wages for nurses in this type of position (Bannov, 2021). However, there is more to be done to improve the overall wellbeing of staff members while they are in the work environment.

Another significant force of change is the course of the pandemic. With the number of cases declining, this could present fewer stressful situations for clinicians. Hospitals and clinics

may lift various mandates aimed to reduce the spread of the illness, which could allow for more socializing among healthcare workers, thus protecting workers against symptoms of depression, anxiety, and burnout (Fang, 2021). On the other hand, if and when cases rise, this could create more stressful situations for frontline healthcare workers, who will be expected to change the way they work based on new policies and new information having to do with COVID-19 (Spoorthy et al., 2020).

2.2 Statement of The Mental Health Problem and Root Causes

2.2.1 Description of the Problem

According to a recent healthcare workers survey (Kirzinger et al., 2021), 55% of a sample of 1,327 frontline healthcare workers reported feeling burned out. In other words, more than half of the health professional workforce is experiencing burnout. 62% of frontline workers cite COVID-19 as a source of their stress and report that it has had a negative impact on their mental health overall. Of those surveyed, researchers also found that 56% have experienced disrupted sleep as a result of the pandemic, that 47% are sleeping too much, 31% experience frequent headaches and stomachaches, 16% have increased their alcohol or drug use, and that 13% have sought mental health services or medications when they never did so before. These figures are larger than they were before 2019 (Kirzinger et al., 2021). One report predicts that the United States will experience more than 1 million nursing job vacancies, especially because 500,000 nurses plan to retire by the end of 2022. This same report also points out that there may be a

shortage of as many as 140,000 physicians by 2033, and a shortage of more than 3 million lower-wage healthcare workers within the next five years (Keveney, 2022).

The CDC explains that this phenomenon is likely because the pandemic itself introduced abnormally high elements of fatigue, loss, strain, and grief to an already long list of stressors for frontline healthcare workers, including unpredictable schedules, demanding physical work, and emotional pressures from relationships with patients. The CDC also notes that many healthcare workers sacrifice their own wellbeing for the benefit of others, which is harmful because it prevents workers from getting the healthcare that they themselves need. There is also a strong stigma having to do with frontline healthcare workers seeking care for their mental health and substance use disorders. This can delay the care that these workers need, adding to the stress and burnout they are already experiencing (https://www.cdc.gov/niosh/newsroom/feature/health-worker-mental-health.html).

2.2.1.1 a.1. Overview of Root Causes

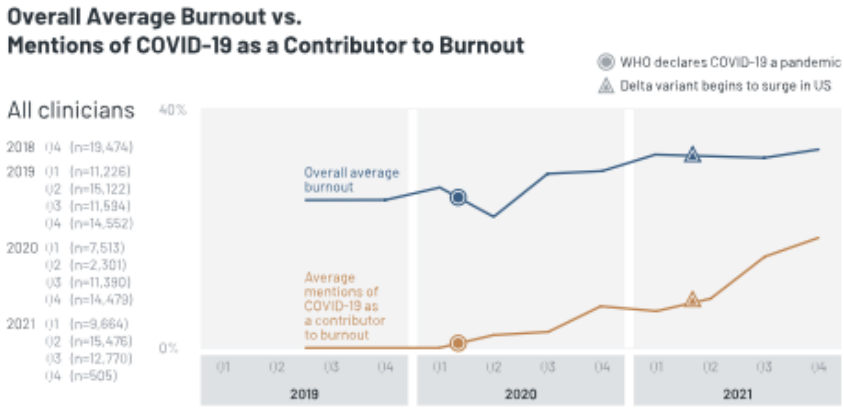


Figure 1. Courtesy of Jeppson, 2021

According to the CDC, Ridge's needs assessment, and other sources, the primary root causes that appear to contribute most to high stress and burnout among frontline healthcare workers include the COVID-19 pandemic, lack of social support, preexisting mental illness, and the demanding nature of the healthcare field. According to a recent KLAS Research report in 2021, one-third of clinicians report feeling some degree of burnout, and 20% of those cite COVID-19 as a key contributor. As shown in Figure 1, this number has risen significantly throughout the extent of the pandemic (Jeppson, 2021). This burnout among clinicians can lead to medical errors, high risk of malpractice, low patient satisfaction, overall poor quality of care (Patel, 2018), and even extreme outcomes such as clinician depression and suicide (Klatt et al., 2020).

Due to the social distancing requirements from the pandemic, social support has become more difficult to maintain (Williams et al., 2020). However, many studies point out the importance of social support in the healthcare field. One study in particular noted that workers who reported higher social support demonstrated lower symptoms of depression, whereas those who reported high levels of loneliness were found to have higher levels of depression and anxiety (Fang et al., 2021). A separate study pointed out that those with a history of mental illness had a higher risk for developing worse mental health outcomes during the pandemic than those who didn't have the same preexisting illnesses (Young et al., 2021). In a similar study, researchers examined the relationship between what they termed "intensified job demands" (IJDs) as a result of the pandemic and their effects on employee burnout. They found evidence that increasing the workload for healthcare workers is associated with a higher risk of exhaustion, especially in emergency care and among nurses (Huhtala et al., 2021).

These primary root causes lead into secondary root causes (Landau, 2023). These root causes include a worker shortage (Yu et al., 2019), long working hours (Bagheri et al., 2019), self

insecurity (feeling unable to cope) (Vizheh et al., 2020), decreased motivation (Buran, 2021), and feelings of abandonment (Chew et al., 2020). Additional causes include maladaptive coping through sources such as alcohol and drugs (Smallwood et al., 2021), increased depression, heightened anxiety (Young et al., 2021), and an external locus of control (Alfuqaha et al., 2021).

Several of these secondary root causes that appear most applicable to this intervention are explained in this narrative. Worker shortage is a highly relevant secondary cause because it is a problem currently being experienced in the majority of healthcare facilities. Research and results of L. Ridge's needs assessment show that extended nursing shortages place heavy burdens on nurses, exacerbating the IJDs issue and leading to a significant increase in stress and burnout (Yu et al., 2019). This has led many healthcare workers to experience feelings of stigmatization, isolation, and abandonment, which all contribute to high levels of stress (Chew et al., 2020).

Some healthcare workers have voiced that they no longer wish to continue working in healthcare, but they don't want to leave their coworkers, so they stay despite feeling abandoned by the healthcare system, by patients, and by other coworkers who have already resigned (Karlamangla, 2022). At the height of the pandemic, one study found that 26.3%, more than a quarter, of healthcare workers reported increased alcohol use as a form of coping, which correlates with mental illness and poor personal relationships (Smallwood et al., 2021). A factor that is highly likely to go hand-in-hand with each of these root causes is a lack of motivation. Recent literature has shown that clinicians' motivation decreased significantly during the COVID-19 pandemic, which is usually a sign of depression and subsequent burnout (Buran, 2021).

According to the information gathered in the interviews (see Appendix A), the global worker shortage, a lack of time to accomplish daily tasks, and patient hostility are all secondary causes indicated to be important for frontline healthcare workers at UPMC as well as in other

healthcare facilities. This was apparent when interviewees indicated that they feel guilty leaving their coworkers to take a break even when they recognize that they genuinely need one.

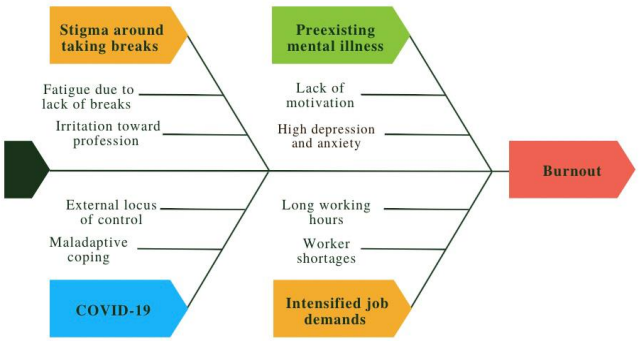


Figure 2. Cause and Effect Diagram

The stigma toward taking breaks and the lack of time for self care has been highlighted as most concerning root causes according to the information provided by current frontline healthcare workers, many of whom are UPMC employees. The frontline healthcare workers interviewed indicated that they were concerned that they and their coworkers were both unable to and unwilling to take time off or breaks from their work routines because of their perceived need to care first for their patients. One physician remarked that healthcare workers did need to take breaks as often as possible, but he didn't see how this was currently possible with such low staff levels and such high demand from patients. This makes it difficult for workers to rest and recover enough mentally and physically to continue caring for patients from day to day.

A few pointed out that workers feel guilty taking breaks because they fear abandoning their coworkers and they feel bad saying "no" to overtime even when they're already tired. This demonstrates a degree of emotional insecurity because workers are unable to voice their own emotional needs and mainly respond to the needs of others. Additionally, multiple interviewees

commented on social connections within departments. One clinician explained that she works well with her friends, but she struggles with others working in different roles, such as managers, some nurses, and sanitation staff. Other clinicians interviewed noted the same phenomenon within their own departments. Though they indicated that most staff members get along well with each other, those negative relationships that do exist have a significant impact on other healthcare workers. Research suggests that this type of social environment can increase stress and lead to a higher risk of burnout (Quadt et al., 2020). Without proper outlets to cope with all of the primary root causes identified previously and outlined in Figure 2, these workers are at a much higher risk for developing poor mental health, especially depression and burnout. Because the use of early intervention and prevention has shown to be much more effective at reducing burnout than treating newly developed symptoms, this intervention aims to target these root causes (Harrison, 2003).

2.2.1.2 a.2 Priority Setting Narrative

It was decided early in the intervention development process that the most likely way to achieve optimal success in this intervention was to select the most prominent root causes of clinician burnout and design an intervention centered around reducing them. The Importance and Changeability Method (Green, 1999) was used as a means to identify these root causes. This method was conducted using the results of interviews with UPMC healthcare workers, along with peer-reviewed research collected. A cause was categorized as "changeable" if peer-reviewed data indicated that a successful intervention was implemented in the past. A cause was then determined to be "important" if interview findings and peer-reviewed research indicated that it was highly relevant to the core issue. Root causes were categorized based on these criteria (Table 1).

Additional criteria were used in the Importance and Changeability method. These criteria included the following: total expense of changing the root cause, how measurable the root cause

is, the level of importance the root cause is to healthcare workers in UPMC, availability of proper resources to address the root cause, and the number of effective intervention strategies available for the cause. The changeability was also used as a criterion for evaluating targetable root causes. This was determined through use of interview information and peer-reviewed literature findings.

Although certain criteria were needed to determine targetable root causes in this method, some aspects were categorized as "not important" or "not changeable" that might normally be considered very important for preventing stress and burnout among frontline healthcare workers. However, they were considered less important for this particular intervention because we needed to evaluate targetable causes. For instance, a worker shortage is a highly significant contributor to the stress and burnout issue, but it is much less changeable according to the criteria chosen.

The nature of this particular issue is more policy-based and it requires significantly more time and resources to address. Because of these obstacles, this cause has been deemed implausible to change in this intervention. Additionally, interview data gathered indicated this cause to be of low changeability despite its high importance. These data overall show that the worker shortage would not be a good candidate as a root cause target in this intervention. After following this standard by which root causes were evaluated, two principal root causes were identified for the intervention. These principal root causes include maladaptive coping and a stigma surrounding workday breaks.

The results of using the Importance and Changeability method led to two main root causes that will serve as the main focuses of this intervention: maladaptive coping and stigma surrounding breaks/culture against taking breaks. The latter contributes to staff taking fewer breaks during the day, which results in fatigue and difficulty accomplishing daily tasks. These principal causes were chosen because both were determined to be highly changeable and highly important. Maladaptive

coping and stigma around taking breaks all fall under a similar category that can be addressed by one intervention. Because mental health has such a large impact on an individual's quality of work (Lerner and Henke, 2008), we deemed this as highly important according to our definition. We also determined that it was highly changeable with the right resources in place that are easy to access. Lack of breaks also has high importance to frontline healthcare workers. It is both changeable and easy to measure with the appropriate resources available.

Table 1. Importance and Changeability Model

	Highly Important	Less Important
Highly Changeable	Maladaptive coping Lack of breaks in workday Fatigue Culture against taking breaks	Lack of motivation
Less Changeable	Worker shortage COVID-19 Long, unpredictable work hours Increased workload Irritation toward profession	Preexisting mental illness External locus of control

Importance and Changeability Methods Table derived from information gathered in frontline healthcare worker surveys and literature listed in works cited.

3.0 Healthcare Worker Mental Health Promotion Plan

3.1 Goals and Objectives

3.1.1 Goal Statement

a. Decrease stress and burnout levels in frontline healthcare workers at WPH.

3.1.2 Objectives

b. This program is comprised of the objective to hold regular 2-minute mindfulness exercises on a daily basis in nurse briefing meetings and preparing meditation spaces for frontline healthcare workers.

Short-Term Objectives-

1. By the end of the first 12 months of the intervention, each nursing unit will hold one 2-minute meditation session at the beginning of each nursing shift at least 96.7% of the time
2. By the end of the first week of Month 1 of the intervention, L. Ridge will meet one time with the unit director or nurse representative (“nurse leader”) to provide an overview and meditation training for one hour.
3. By the end of the third week of Month 1 of the intervention, L. Ridge will follow up with the nurse leader at least once.

Long-Term Objectives-

1. By the end of the third week of the intervention, the nurse leader will report knowing how to lead least three meditation practices.
2. By the end of the seventh week of the intervention, 55% of nurses will report participating in at least one 2-minute meditation offered by the nurse leader.

3.2 Intervention Strategies and Implementation

Figure 3. Logic Model

Table 2. Intervention Timeline

Timeline (Months)														
Activities	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Train and practice with nurse leader	X													
Begin leading daily 2-minute meditations with nursing staff	X													
Conduct stress and burnout surveys for analysis			X			X			X			X		
Conduct feedback interviews with nurse leader and staff						X						X		

3.2.1 Intervention Strategies

A nurse leader will be responsible for holding the 2-minute meditations each day. This nurse leader may be the unit director (a registered nurse, commonly known as a "nurse manager" in other clinical settings), a nurse selected by the unit director, or a nurse who volunteers to lead the meditations. This individual would not be compelled to lead; following a brief meeting with L. Ridge to learn about the intervention, the nurse will decide whether they would like to lead in their assigned unit. If not, then that nurse is not required to do so and another individual may be identified. The reason the nurse leader was chosen to fill this role is because they are in constant, daily contact with all of the nurses in the unit. This makes it more likely that this routine will be maintained for years after initial implementation. The nurse leader understands the culture of the unit and the unique needs of the nurses who work there. Thus, they will be better able to cater the meditation practices to the specific needs of their nurses as opposed to an outside social worker, clinical psychologist, or Ridge as the project director. The nurses will also be very familiar with the nurse leader, making them more likely to trust their judgement and participate in the meditation exercises, which are expected to help lower their stress and levels of burnout.

The reason for holding these 2-minute meditations during briefing meetings is because it gives nurses the opportunity to practice mindfulness without having to figure out when and how to do so on their own. Independent practice like this was expected in other similar interventions, and it resulted in healthcare workers being unable to set aside the time necessary to participate in mindfulness practices (Kang et al., 2019). Thus, we decided that this would not be effective in this program. Our chosen method with group practices creates accountability for nurses, increasing the likelihood of participants actually engaging in mindfulness meditation. According to an analysis that implemented a similar intervention with 5-minute meditations for a nursing unit, "Delivering

the intervention in a group format might also alleviate the sense of loneliness and foster a feeling of 'being part of,' which has been found to be beneficial" (Rodriguez-Vega et al., 2020).

With time, meditating like this each day is expected to become a habit for these nurses. Repetition is essential for helping individuals experience the calming, soothing effects commonly associated with mindfulness meditation (Rodriguez-Vega et al., 2020). This thus results in them feeling lower levels of stress and burnout, allowing us to achieve our overarching goal in this program.

This portion of the intervention is also meant to cultivate a deeper sense of community by spending time with the other nurses during this practice, thus helping them to feel that they have supportive peers that they can turn to for help. In turn, this can alleviate any feelings they have of being abandoned. It shows that they are all there in this together and that no one is going to be left alone. This in turn acts to help staff members feel less guilty taking breaks, especially breaks as brief as a moment to breathe and be mindful.

3.2.2 Implementation

In order to meet the first objective, L. Ridge will meet with the nurse leader one time at an hour chosen by the nurse leader to give an overview of mindfulness meditation as well as practice leading these meditations. The nurse leader will then be granted approximately two weeks to practice following guided meditations with the Insight Timer app and leading the meditations both alone as well as with Ridge in follow up meetings. At the end of the two weeks, the nurse leader will be responsible for setting aside five minutes in each nurse briefing meeting before the beginning of each shift to guide all of the nurses in the unit through a mindfulness meditation exercise. Though the nurse leader is primarily responsible for ensuring that the 2-minute

meditation exercise takes place every day, it is possible and even encouraged for other nurses within the unit to lead the exercises if they would like to do so.

Training the nurse leader with Ridge for this program can take place either in-person or virtually using Microsoft Teams (this being the platform used at UPMC). This is to provide flexibility and thus reduce any stress for the nurse leader, who will decide which modality to use based on which is most convenient, which helps the most, and whichever the nurse leader personally prefers.

The hour-long trainings themselves will include an overview of mindfulness meditation in general, a meditation exercise to demonstrate the concept, strategies for introducing this idea and intervention to the nursing staff, and an introduction to the Insight Timer app. This app was chosen because it contains more than 130,000 different meditations, all of which are free and extremely accessible both in a hospital setting as well as in any other setting, including a home environment. Ridge will compile an easily accessible playlist of 2-minute meditations specifically for the pilot group, but they are welcome to browse through the other meditations if they choose to do so. This way, nurses will be able to use the meditations offered on the app at home if they choose to do so. This will also allow the nurse leader to practice outside of meetings with Ridge.

After two weeks of this practice and training, the nurse leader will incorporate 2-minute meditations at the close of daily briefing meetings with nurses. These meetings are held in-person, so the practices will be led also in-person. This is the ideal situation to lead meditations because all nurses in the department are present to participate in the practices. Before leading the meditation, the nurse leader will be responsible for clearly communicating that participation is encouraged, but not required. If, for whatever reason, some nurses are unable to participate or would prefer not to engage in the practice, they are excused to begin working on their units.

3.2.3 Overcoming Resistance and Barriers

In terms of the entire program, it is possible that we will experience pushback from frontline healthcare workers, as was seen in a similar intervention. The most common complaints from these staff members was that they didn't have the time to add something else like meditation to their schedules, and adding meditations to meetings would only add to their already lengthy lists of things to do that day, resulting in more burnout and stress (Rodriguez-Vega et al., 2020). In order to address this, it is imperative that frontline healthcare workers are told at the very beginning of the intervention that both the rooms and the in-unit practices are optional. The nursing unit meditations are only 2 minutes long, so this should not cause a significant change to nursing schedules. Our objective is to reduce stress, not to increase it. If staff members feel that the intervention is adding to their stress and burnout, then they are by no means required to continue taking part in it. Rather than participate, they will be asked to sit quietly and mentally prepare for their day, pray, or consider things for which they are grateful.

In considering the intervention itself, relatively few challenges can be expected because of its overall low risk (Ridge, 2022). Despite this, there are some issues that may arise. For instance, the nurse leader may have days off, vacations, or be unable to work due to illness. The leader could appoint another nurse to lead the meditations instead, but there could be miscommunications or that appointed person might not be able to attend either. This could result in failure to hold the 2-minute meditations in debriefing meetings. However, everyone in the nursing department will have been exposed to Insight Timer, making it easy for anyone in the group to select a meditation from the app and play it on speaker for everyone else to hear. It should be quite natural for nurses to add this into their meetings with or without the nurse leader present since we expect that they will have been doing this routinely for weeks already.

Meeting with the nurse leader before implementing this intervention may also prove to be challenging. It may be difficult to find a good time to meet with the leader. It is because of this that we aim to meet at some point within the first week of the intervention. This gives the nurse leader enough time to determine when would be best to meet with L. Ridge. If the leader requests more time to practice the meditations before leading them to the nursing unit, this could absolutely be granted. However, it could be only granted for up to two additional weeks before a social worker or Ridge would need to begin leading meditations in the nurse staff meetings up until the nurse leader feels prepared enough to do so.

It is possible that the nurse leader, after previously agreeing and participating in the training, will decide not to lead the meditations in briefing meetings after all. Should this occur, Ridge would discuss the leader's concerns in one of their follow up meetings. This should answer questions, resolve issues, and ultimately help the nurse leader be willing once again to incorporate the mindfulness meditation practices in briefing meetings. If the leader still chooses not to participate, then another nurse within the unit may volunteer to lead the meditations. If none of the nurses on the unit, including the nurse leader, are interested at all in mindfulness meditation, they are by no means required to participate. Because forced participation is likely to introduce additional stress and frustration, they will not be included in the intervention and they will not be penalized as a result.

Though highly unlikely, there is a possibility that nurses will experience worse outcomes as a result of their participation in the meditations. One similar intervention found that 5% of the nurses involved experienced adverse effects such as anxiety, panic attacks, and emotional meltdowns. However, these meditation sessions were 5 minutes long; this intervention's 2-minute sessions are less likely to cause similar symptoms (Gauthier et al., 2015). Because mindfulness is

psychological in nature, it is possible that suppressed thoughts and feelings may arise in response to mindfulness meditation (Ridge, 2022). When this occurs, the nurse leader will be responsible for directing affected individuals to the hospital social worker and counseling services. As stated previously, participation in these meditation practices is not required; those who do have adverse reactions are encouraged to step back and wait quietly until the exercise has concluded without participating. That being said, however, this is an extremely rare occurrence and is not expected in this intervention.

3.3 Evaluation Plan

3.3.1 Evaluation Summary

In order to fully evaluate this program, the intervention is designed with a non-experimental evaluation that addresses process, impact and outcome evaluations, as noted in Tables 3-5. The evaluation for impact and outcome evaluation will be non-experimental because no control group will be used to compare measurements. The first observation in the design will serve as a pre-measurement test for each objective. L. Ridge will send a text to the nurse leader asking whether meditation was added to the meeting that day, to which the nurse leader will only have to respond with a yes or a no. Ridge will maintain a count of these texts to determine how often meditations are being added to nurse meetings compared to the number of days in which the program is being implemented. In order to further determine effectiveness, Ridge will conduct both pre- and pos-analyses both prior to meeting with the nurse leader and after 48 weeks of the intervention.

Additionally, every nine weeks Ridge will text a QR code to the nurse leader, who will show this code to all of the nurses in that unit during their nurse debriefing meeting. Nurses will then report the extent of their stress by scanning the code with their phones, which will link them to the Brief Nursing Stress Scale (BNSS) survey (as listed in Appendix G), allowing them to indicate how often they find certain situations within their environment overly stressful on a scale ranging from "never" to "almost always." Each participant will be assigned a number in order to encourage completely honest responses without fear of reprimand or other negative consequences. Taking this survey should require less than a minute each time it is taken, so it would be easy to add to a nurse debriefing meeting and should not cause significant interruptions to the nursing staff's daily workflow. Ridge will collect the data gathered from this monthly survey for further analysis.

In order to evaluate the process objectives for this intervention, we anticipate using process evaluation. First, L. Ridge will keep a detailed account of each meeting she has with the nurse leader – how long the meetings are, how often the leader reports practicing between meetings, and any of the nurse leader's questions, concerns, or insights.

In order to evaluate the impact objectives for the health education strategy, we will be using impact evaluation. In each follow up meeting with the nurse leader before this leader begins leading meditations within the unit, Ridge will determine how many meditation practices the nurse leader knows and how many more need to be learned. Additionally, when the nurses respond to the QR survey after every nine weeks, Ridge will count how many report participating in the 2-minute meditations "occasionally" and more, as is recorded on the Nursing Stress Survey. She will use these counts and compare them to the number of nurses in each unit in order to determine of what percentage are participating.

The long-term objective for this intervention by the end of Week 48 is to have decreased stress and burnout levels by 30% for nurses and 10% for other healthcare workers. In order to evaluate this, outcome evaluation will be used. As is explained previously, this will be evaluated with the use of the two surveys linked to QR codes. These survey results will be compared to the baseline data gathered right before the first meditation is led in the meeting This will be using the same method as described previously), using a paired T-test and ANOVA to determine whether or not there is a significant correlation between meditation use and stress levels in frontline healthcare workers. Any data for nurses who leave WPH before the end of the intervention and new staff who join after the intervention has been implemented will be excluded from this analysis in order to insure consistency.

3.3.2 Process Evaluation

Table 3. Process Evaluation Plan

Objective	Indicator/Statistic	Data Collection Sources and Methods	Who Will Collect Data, By When, How
By the end of the first 12 months of the intervention, each nursing unit will hold one 2-minute meditation session at	Percentage of days when mindfulness meditation was included in the daily nursing meeting.	Text message from nurse leader after leading the meditation for the day.	The nurse leader will be responsible for sending L. Ridge a text to inform her each time that

the beginning of each nursing shift at least 96.7% of the time (each unit fails to include the meditation session 12 times at most or one time per month).			the meditation was led in the meeting. Ridge will analyze the data after every four weeks. This will repeat for 12 months or 48 weeks.
By the end of the first week of the intervention, L. Ridge will meet one time with the nurse leader to provide an overview and meditation training for one hour.	Number of training meetings within the first week of the intervention.	Count of training meetings held as reported by L. Ridge.	L. Ridge will count and record how many training meetings she has with the nurse leader before the end of the first week of the intervention.
By the end of the third week of the intervention, L. Ridge will follow up with	Number of follow up meetings were held between L. Ridge and the nurse leader, including text message	Count of follow up meetings as reported by L. Ridge.	L. Ridge will count and record how many follow up meetings she has with the nurse

the nurse leader at least once.	conversations, virtual meetings, in-person meetings, and over-the-phone meetings.		leader before the end of the third week of the intervention.

Process evaluation will be used to determine the success of each of the interventions process objectives. Evidence will be gathered and used to improve the function of the intervention. While negative side effects are possible, they are highly unlikely and any evidence will be used to modify the program in a reasonable amount of time.

In considering the intervention itself, some challenges are to be expected. For instance, meeting with the nurse leader before implementing this intervention may prove to be challenging. It may be difficult to find a good time to meet with the manager. It is because of this that we aim to meet at some point within the first week of the intervention. This gives the nurse manager enough time to determine when would be best to meet with L. Ridge. If the manager requests more time to practice the meditations before leading them to the nursing unit, this could absolutely be granted. However, it could be only granted for up to two additional weeks before Ridge would need to begin leading meditations in the nurse staff meetings up until the nurse manager feels prepared enough to do so.

It is possible that the nurse leader, after previously agreeing and participating in the training, will decide not to lead the meditations in briefing meetings after all. Should this occur, Ridge would discuss the manager's concerns in one of their follow up meetings. This should answer questions, resolve issues, and ultimately help the nurse manager feel comfortable incorporating the mindfulness meditation practices in briefing meetings. If the manager still

refuses to participate, then either another nurse within the unit may volunteer to lead the meditations. Entire units that decline participation may be excluded from the intervention without repercussions.

3.3.3 Impact Outcome Evaluation

Table 4. Impact Evaluation Plan

Objective	Indicator/Statistic	Data Collection Sources and Methods	Who Will Collect Data, By When, How
By the end of the third week of the intervention, the nurse leader will report knowing how to lead least three meditation practices.	Number of meditation practices that the nurse leader feels comfortable leading in front of a group. Reported by nurse leader.	Number of meditations as reported by the nurse leader.	L. Ridge will ask the nurse leader in follow up meetings how many meditations have been learned. She will calculate the total number of known meditation practices on the day after the end of the third week

			of the intervention.
By the end of the seventh week of the intervention, 55% of nurses will report participating in at least one 2-minute meditation offered by the nurse leader.	Number of nurses who complete the survey each month and answer that they occasionally, almost always, or always participate in the 2minute meditations.	Reported in response to the first question listed on the Nursing Stress Survey each month.	L. Ridge will collect this data and count the number of nurses who report that they occasionally, almost always, or always participate in the meditations. This collection will occur one day after nurses have submitted their surveys every four weeks.

Table 5. Outcome Evaluation

Objective	Indicator/Statistic	Data Collection Sources and Methods	Who Will Collect Data, By When, How
By Week 48 of the intervention, median rates of stress and burnout will decrease by 30% in nurses	Percent of frontline healthcare workers experiencing high stress (scoring 4 and above in the BNSS) and/or burnout	Brief Nursing Stress Scale (BNSS) Maslach Burnout Inventory	L Ridge will collect this data every four weeks

Use of this program is expected to reduce median stress levels as evaluated by the Brief Nursing Stress Scale by 30% (Cleveland Clinic, 2016; Gauthier et al., 2015) and to reduce median burnout levels as measured by the Professional Fulfillment Inventory by 10% (Gauthier et al., 2015; West et al., 2016). These figures were chosen because the outcomes of similar studies saw comparable results in one month of their study; this intervention goes for the duration of twelve months, so the outcomes measured in the other studies were extrapolated to reflect this timeline.

3.4 Plan for Sustainability

The goal is for this program to become an integrated part of hospital functions should the program successfully reduce burnout and prove to be both valued and accepted by the nurse participants. Following the first 12 months of implementation, the plan is to seek further funding from the board of directors in order to incorporate this program into the routine functions of

Western Psychiatric Hospital. This is expected to take as long as six months. Ridge will also hand off the program to HR in order to continue maintaining the meditation spaces. They will be given the information needed to access the data results so that more incoming data can be analyzed. The QR codes are not expected to change, so these can be used almost indefinitely. No funding will be necessary to maintain the 2-minute meditations. This will result in this program becoming self-sufficient within approximately 18 months.

One foreseeable challenge that may arise is the lowered threat of COVID-19. As this illness becomes less threatening over time, it's possible that staff members will see less need for the intervention to continue. However, it will be essential for the program to continue being supported in order to prepare frontline healthcare workers for challenges that will arise in the future. Rather than scramble the way the country did at the beginning of the pandemic, this will allow staff members to be emotionally ready to take on the problems that come.

The Insight Timer app will serve as a key source of support for future 2-minute meditations. The app changes frequently with new meditation teachers posting material and seasoned teachers also posting new talks and meditations. All of this is free of charge, which makes it a financially very feasible option for offering additional practices and trainings for new nurse managers. There are other programs available that offer meditation leading training, but these include fees and other charges. Nurse leaders are welcome to use these at their own time and expense or at a separate expense granted by the hospital, but it is not part of this particular program. Ridge determined that the free meditations offered on this app are sufficient for training nurse leaders in these very brief practices.

Appendix A Themes and Strengths Full Interviews

Appendix Table 1

Interview 1 **Joye Gingrich, CNO** **UPMC Carlisle**	
How would you describe the overall quality of life working in your hospital?	It's better. We're still in crisis-mode from staffing, but not from COVID anymore. We actually just had a strategic plan meeting with our leadership. Everyone from leadership except for one educator was there. Everyone was there. We got together in a meeting house, each took our DISC assessment, did some chair yoga together, and really looked at our mission and values at UPMC. We used these and made our own goals within the UPMC pillars. So, yeah, I think our team building is good. Our leaders our hungry and ready…recruitment and retention are what's hard for everyone.
Do you think that people in your unit feel connected to each other (e.g., a sense of belonging)? Explain.	Especially after our strategic plan meeting, yes! For instance, our AODs don't really get to see each other

	because they work at night. This meeting made it easy for them to get to know everyone else a lot better.
Is your hospital a safe place to work? Would you feel safe approaching a supervisor to call attention to an issue?	In the past, when UPMC Carlisle was first acquired, write-ups were very punitive. No one would would fill out an incident report because they didn't want to get a write-up. Now, we make it very clear that these aren't punitive. We ask our employees to drop an incident report when something happens, and then we use those to track issues. We use them to get better. It's definitely trickled down. I think our people feel comfortable with their leaders.
What do you think are the greatest strengths of your hospital in general?	Our multi departmental relationships. No one is above another. We are all equals. We all supports for each other. Our doctors fight for our nurses. Our safety huddle every day is well-attended by our leaders – even by the hospital president, the director of operations, I even go! We conduct root cause analyses to figure out what we need to fix so that we can get better. So I'd say our relationships across departments are our strongest assets here.

What do you think are the greatest challenges that people in your hospital face?	Our leadership works well together. Our personnel across departments, not as much. It's gotten better because leaders across different departments get along so well, but we still see a little head-butting when we get down to the frontline workers.
Are there networks of support for frontline healthcare workers in your hospital? (Consider coworkers, support groups, outreach, agencies, and organizations) What do you think are the strongest networks of support?	Yes, but it's underutilized. We do have a stress management team that gets used a lot. It wasn't used as much before the pandemic, but it's definitely used more now. I sometimes make my people go see them when I can tell they're right at the end [of their rope] and they can't take it anymore. I think access to these services are better, but they're definitely not maximized, and that really needs to improve. I think there's still a bit of a stigma there.
What do you think are the biggest stressors that frontline healthcare workers in your hospital face?	*Childcare*. This is the biggest outside stressor for sure. If I could be given all the resources in the world to change one thing about the pandemic, it would be schools and childcare. I have nurses who have a really hard time with their shifts because they're homeschooling at the same time. It's a huge stressor for them.

	I think we're all feeling the effects of the nursing shortage, too. Even though we've kept our nurse-to-patient ratios. We did not deviate from that during the pandemic. But when we lost some nurses to traveling positions or some just left…it's just been hard on everyone, especially those who have been here for a long time. They're family! And it's hard for those left when they suddenly aren't here anymore.
What do you think your hospital can do better to help people facing stress and burnout (or to improve mental health among healthcare workers in your hospital)?	I think leader rounding on staff would be really helpful. I think staff really need to know that they're appreciated. It's the little things. They need to be recognized for the work they're doing and told that they're doing such a great job. I also really believe that we need to do a better job to take joy in what we do. We need to remember what fills our cup. It's asking, "What brings you to work?" For me, I love being a nurse. Taking care of patients fills my cup. I think it's about figuring out how to get nurses to take that minute to think about that.
What are your thoughts on mindfulness meditation in the workplace? Is that something you	You know, that's so interesting! We talked about bringing more of that here…the person who taught us chair yoga talked about mindfulness, about taking care

would like to see used in your hospital?	of ourselves, things like that. We actually just set up some zen rooms. There's one on every floor. They have massagers, chairs, diffusers, things like that. Every once in awhile, I tell a nurse to go in there for fifteen minutes, but we really need more. I had one nurse that I brought there recently – I got her a soda and had her spend some time in one of these rooms, and it really helped. The chapel here is always empty, and I sometimes tell people to just go in there. I sometimes go there a couple of times a day! We need more, we need to encourage our staff to take advantage of these. In terms of the response to mindfulness, I think we have a mixed group. The people who do yoga seem to really respond well. It calms them down. We all have something that calms us down, you know? We definitely don't do that enough. We're always excited to add more!

Appendix Table 2

Interview 2 **Miguel Ibarra, MD** **Rush Academic Medical Center**	
How would you describe the overall quality of life working in your hospital?	Overall my quality of life, all things considered, is great at my hospital. Mental health is very important at my institution and they have in place various resources to help us. Life can get busy and challenging during difficult rotations with long hours but other than that we have it pretty good compared to what I have heard about from other hospitals.
Do you think that people in your unit feel connected to each other (e.g., a sense of belonging)? Explain.	To a certain extent. In academic medicine, everyone rotates every 2-4 weeks. You make connections with the people you work with only to have to move to another rotation and start all over. Sometimes the new team isn't as close as the one you just left and that can be difficult.
Is your hospital a safe place to work? Would you feel safe approaching a supervisor to call attention to an issue?	Very safe. We have a self-reporting app for missed events, safety hazards, etc. Open communication is actively encouraged and everyone on the healthcare team is professional. No one person is "more" than the other.

What do you think are the greatest strengths of your hospital in general?	This year they ranked #16 hospital in the country. Rush really is a family. Knowing people are going to help and support you helps you and the organization become better.
What do you think are the greatest challenges that people in your hospital face?	Burnout. A hospital can only help its staff so much. Burnout happens from demands within and outside of the hospital. People have lives outside of work and unfortunately, some people have higher burdens they carry.
Are there networks of support for frontline healthcare workers in your hospital? (Consider coworkers, support groups, outreach, agencies, and organizations) What do you think are the strongest networks of support?	We have counseling and any support group you can think of. In my experience, my strongest network of support is my family and close friends.
What do you think are the biggest stressors that frontline healthcare workers in your hospital face?	I think the stress of the pandemic on top of the ever-increasing line of patients who need help on top of the nursing and physician shortage is stressful. There is never really a break. It just keeps going. Always someone else to see.

What do you think are the best resources that staff in your hospital can access to help those facing stress and burnout?	Counseling and reaching out to trusted friends. It is hard to suffer on your own. Reaching out for help is important.
What do you think your hospital can do better to help people facing stress and burnout (or to improve mental health among healthcare workers in your hospital)?	Potentially providing more breaks. This is not very feasible. More mental health mandatory meetings don't help. Perhaps more free food or things they can do to ease the burdens people have outside of medicine. For example, some people need childcare, maybe the hospital can provide that and that would be one less thing people would need to worry about while at work.
What are your thoughts on mindfulness meditation in the workplace? Is that something you would like to see used in your hospital?	I would like to see this. However, I don't know when in the busy day with all of our required tasks we would fit that in, and maybe that is the issue we are so focused on the work we need to take a break and get mindfulness in.

Appendix Table 3

Interview 3 **Nick Kilpatrick, MS, PA-C, ATC** **UPMC Susquehanna**	
How would you describe the overall quality of life working in your hospital?	There's a really low amount of turnover here. We have a lot of older people who tend to stick around. It's not for everyone, though, that's for sure. But I like a lot of the people around the office, so I think it's pretty good.
Do you think that people in your unit feel connected to each other (e.g., a sense of belonging)? Explain.	For the most part. There are a few cliques here and there, but I think that's everywhere. Actually, I remember they all went out to do an escape room together, and I heard that they all had a really good time. We've been talking recently about having a picnic with everyone so our families can get together. They used to do that before covid, but it looks like we might be able to do that again soon. I'm pretty new here, so I haven't gone to everything that's been offered, but I do know that there's a minor league in the area that the staff likes to go see together. Sometimes the doctors get to throw the first pitch, which is pretty cool. We also get certificates for free

	stuff when we're seen doing something well by admin. I got a bonus recently and used it to throw a pizza party for everybody. It really meant a lot to everyone, and I meant it. I wanted to do it for them.
What do you think are the biggest stressors that frontline healthcare workers in your hospital face?	So, we're an outpatient clinic, so our appointments are all scheduled, which makes that part of seeing patients easier. We're also an occupational medical clinic that treats a lot of people associated with the local steel mills. It's a smaller area, so we get a lot of walk-ins from people needing emergency care that doesn't really need attention from an ER. What's hard is our lack of staffing – medical assistants and nurses. They're the ones who check in patients and get rooms for them where they can be seen by a provider. So people tend to get angry because that leads to a lot of waiting. I know I get frustrated because I have an open window and I can't see a patient because they haven't been seen first by a nurse. So there's a lot of movement that makes it kind of stressful.
What do you think are the best resources that staff in your hospital	That's *hard* here. I mean, people have scheduled breaks for lunch and all of that, but they feel bad leaving all the work for their coworkers, so they hate

can access to help those facing stress and burnout?	to go and usually work through their breaks and lunch time. We have a pretty busy office anyway, so they just keep working and they don't really stop to unwind.
What do you think your hospital can do better to help people facing stress and burnout (or to improve mental health among healthcare workers in your hospital)?	Scheduling. Meaning scheduled breaks. People have them, I know, but they don't take them, so it would help if they actually took them. I think more staff would definitely help too, like one or two extra people floating around. I know, though, I get it – we have a budget we have to stick to , but yeah. If we could hire one or two, that would really help. Not providers though. Fewer providers means we see fewer patients, which relieves the staff of a lot of stress.
What are your thoughts on mindfulness meditation in the workplace? Is that something you would like to see used in your hospital?	I love it! I actually meditate myself several times per week. I usually take five to ten minutes here and there to take a few breaths. I even like to do it between patients sometimes. For me, it helps calm me down. I sometimes have to deliver life-altering news to patients, and that can be pretty stressful, so mindfulness helps me avoid having a hot head and just keeps me calm. We do have meditation meetings scheduled, but it's when a lot of staff work through

Appendix Table 4

Interview 4 **Soraya Frings** **Medical Assistant** **UPMC Hillman Cancer Center**	
How would you describe the overall quality of life working in your hospital?	It's not bad. I think they're really trying their best. I feel like I have a good amount of control over my situation personally because I work part-time at an outpatient clinic, and then I pick up at the hospital in off-hours. That being said, I'm always being asked to work more than I was originally scheduled. I feel pressured to work extra. I know, any help is really needed, but they're always asking for extra time when I can only do so much, and I feel really bad saying no. We do get teamwork reminders pretty often, so I think that helps to remind the doctors and managers that we're working as a team and contribute what we can when we can.
Do you think that people in your unit feel connected to each other (e.g., a sense of belonging)? Explain.	I think, at the hospital, we're in a pretty healthy environment because everyone is moving around from department to department so often. In our outpatient clinic, though, there's a divide and I'm not sure why.

	There, there are two people assigned per section, and you see a lot of lead seniority issues. The older people are more connected to each other, but the younger staff don't feel that as much. I have to leave that job to go to nursing school, and I was really nervous to tell people about it because I knew they would make me feel guilty about it.
Is your hospital a safe place to work? Would you feel safe approaching a supervisor to call attention to an issue?	For the most part, yeah. I do have a leader that seems to give special treatment to their friends. Those people usually have less patients to work with, and they get the better shifts in the schedule. It just seems a little unfair.
Are there networks of support for frontline healthcare workers in your hospital? (Consider coworkers, support groups, outreach, agencies, and organizations) What do you think are the strongest networks of support?	We do in the outpatient clinic. There are three people in charge, and they're really good to do rounds on us and check to see how we're doing. At the hospital, we just have the doctors and the director. I can talk to the director just fine.

What do you think are the biggest stressors that frontline healthcare workers in your hospital face?	I think reliability on coworkers is a big one for us. I know I feel a lot of pressure from the doctors and the managers, yet I can only do so much. There are longer wait times right now, so a lot of people get frustrated with that. So I guess I'd say that time is the biggest stressor for us. There's only so much you can do with the time you're given.
What do you think are the best resources that staff in your hospital can access to help those facing stress and burnout?	We have group huddles every month in the outpatient clinic where I work that really help. These give us the chance to voice our concerns and talk about ways to deal with the things that are bothering us. It lets us remind each other that there's so much that can be done by the nurses and medical assistants. And we do this in small groups, so it isn't intimidating to open up in front of a big group. And I feel really comfortable talking to all of the unit directors, so I know I can bring up whatever's bothering me. We only have these once a month, but I would really like to see more. Maybe once or twice a week would help people feel a sense of organization. We have them more often in the hospital where I go to fill in, but they're pretty sporadic.

What do you think your hospital can do better to help people facing stress and burnout (or to improve mental health among healthcare workers in your hospital)?	I think they could check on everyone more. There are certain people who aren't as busy at certain times as others, and I know it really takes a load off and definitely helps when someone comes by to ask if we need extra help. And – I know this might be a stretch, but more staff would be better too. That and better pay. It's just frustrating because we feel like we're doing so much, yet we aren't been compensated fairly for it. I heard that Allegheny General pays more, but I also heard that their benefits aren't as good as UPMC's, so I guess there's pros and cons to either option, and we're seeing it all over.
What are your thoughts on mindfulness meditation in the workplace? Is that something you would like to see used in your hospital?	I think it would be nice. I think it would be good to introduce to the unit and to be able to sign up to go with your friends. I think it would be good to have an incentive to try it so that people are more likely to go back, because I think everyone should at least try it. I think that's a resource that lots of people would utilize.

Appendix Table 5

Interview 5 **Kristian Feterik, MD** **UPMC Presbyterian-Shadyside,** **UPMC Magee-Women's Hospital**	
How would you describe the overall quality of life working in your hospital?	It's different between the two hospitals. Presby-Shadyside is like one entity with two campuses. Presby has a large medical staff with a care-driven focus. It's mainly run by the fellows, and we have some non-teaching attendings. It has about 750-760 beds whereas Shadyside is smaller with about 500 beds. It's more of a community hospital, basically a hybrid academic hospital. It has more attendings and even a staff "lounge" to accommodate the physicians. Magee is a lot like Shadyside, with more private attendings. Most of them are employed by UPMC, but some of them aren't. We actually recently moved an entire team from [Presby] to Magee because there weren't enough nurses back in [Presby].
Do you think that people in your unit feel connected to each other (e.g., a sense of belonging)? Explain.	It depends on the hospital. In Presby, there's a bit of a condescending undertone toward attendings by residents and fellows. This has a lot to do with the fact

	that attendings are usually there for seven days before they're changed to a completely different unit, so it's hard to get clear answers when the lead physician is one person one week and someone completely different the next. Because it's such a large hospital, we tend to get one new physician or medical student per month, so change is constant. The other two hospitals foster more of a private practice mentality, which really helps physicians feel a heightened sense of autonomy.
Are there networks of support for frontline healthcare workers in your hospital? (Consider coworkers, support groups, outreach, agencies, and organizations) What do you think are the strongest networks of support?	Yes, in the other two hospitals. You get a lot more space to yourself as a doctor, and you get a lot more space to ask a consultant for help. It's harder to feel this way in Presby, again, because it's so large. We do have someone who is in charge of physician wellness and has been in this role for five years with another physician working alongside her. They send out a survey every other year to get an idea of the severity of burnout and then put together programs accordingly. We also have wellness conferences, presentations, and workshops that teach ways to cope and handle stressful situations. There is also a help

	line for doctors so that they can have a confidential debriefing if need be. There is also a professional coach program in place. This involves seasoned doctors or medical students who act as peer coaches for other doctors, and they then teach those physicians how to become coaches as well.
What do you think are the biggest stressors that frontline healthcare workers in your hospital face?	I can think of many! One thing that's hard is that the way supplies are organized are different in every nursing unit, and some are short on certain supplies while others aren't. If you as a doctor have to move from unit to unit only to be met with a different supply room every time, it can get very frustrating and take extra time just to get the supplies that you need. The pandemic has been a major stressor. It's led to shortages, so nurses and doctors are both asked to do more to cover what's normally taken care of by a larger staff. Something that we notice especially in Presby is how difficult it is having centralized pharmacy delivery. We do use very sophisticated robotics to ensure that medications are filled, but it can take quite some time

	for those medications to be sent to each unit. So, if a nurse opens an order to find that a medication is missing, then it takes a significant amount of time to get that missing medication, which stresses them out, as well as the doctors who don't understand why the patient doesn't have their medicine, and especially the patient who is uncomfortable and needs that medication. It can create some significant workflow issues and subsequent stress. We've seen a lot more stress in the ED than we used to because we don't have enough beds for everyone who comes in, so patients have to wait there for beds for sometimes multiple days. We call them "boarders" because they're having to wait to be seen by a clinician until they get a bed, and we don't always know when that will be. This creates a tremendous amount of stress for the patient as well as the staff. It's mainly due to staffing shortages. Staffing has affected us in many ways. The EMR…I would compare it to using a spreadsheet; it's not always intuitive for everyone. Some people use it a lot and they understand how to use it well, but those who don't tend to get frustrated with it more

	often. And it changes fairly often with new updates, making it difficult for many clinicians to use. They've basically made a paper chart into an electronic chart with added complexities. What I've seen is physicians feel like the information is way too much and the work necessary to get it all filled out amounts to about 15-20 minutes per patient. And that's just for charting! So, yes, it can contribute to physician stress.
What are your thoughts on mindfulness meditation in the workplace? Is that something you would like to see used in your hospital?	You know, that's interesting because we just had a conference session that talked about mindfulness and getting more in touch with the mind-body connection. I know Pitt has also taught a leadership course looking at mindfulness as an approach to reducing stress. I think it's a nice resource to have.

Appendix Table 6

Interview 6 **Aspen Wayment, PA-C** **Peak Plastic Surgery**	
How would you describe the overall quality of life working in your clinic?	The quality of life in our workplace is wonderful. We have a great team who works well together and has the priority of creating a good work life balance which makes all the difference!
Do you think that people in your unit feel connected to each other (e.g., a sense of belonging)? Explain.	Definitely. With that trust and personal connection comes the assurance that we could talk about any issue that comes our way.
Is your clinic a safe place to work? Would you feel safe approaching a supervisor to call attention to an issue?	Definitely. With that trust and personal connection comes the assurance that we could talk about any issue that comes our way.
What do you think are the greatest strengths of your clinic in general?	Our greatest strength I would say is the focus of our clinic, and the mindset of the surgeons we work for which is above all else patient centered. Each of us cares deeply about the patients we serve and it makes it feel more than just a job.

What do you think are the greatest challenges that people in your clinic face?	I would say our greatest challenges are dealing with the intricacies of insurance companies to obtain adequate coverage for necessary procedures on our pediatric patients.
Are there networks of support for frontline healthcare workers in your clinic? (Consider coworkers, support groups, outreach, agencies, and organizations) What do you think are the strongest networks of support?	I think they are doing a wonderful job currently, I honestly can't see a way at the moment that they can improve
What do you think are the biggest stressors that frontline healthcare workers in your hospital face?	I would say probably time constraints and patient loads.
What do you think your hospital can do better to help people facing stress and burnout (or to improve mental health among healthcare workers in your hospital)?	I think they are doing a wonderful job currently, I honestly can't see a way at the moment that they can improve
What are your thoughts on mindfulness meditation in the workplace? Is that something you	I'm not against that idea. I don't personally implement this, but could see how it could be a very helpful addition to a stressful day!

would like to see used in your hospital?	

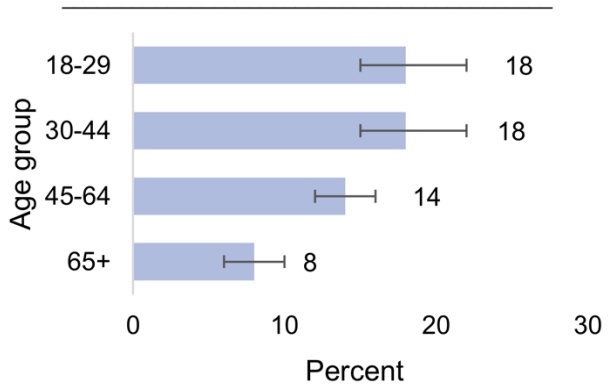
Appendix B Mental Health Services and Organizations

Appendix Table 7

Name of Agency	Mission	Description of Services Provided	Contact Information
Workpartners	Help clients create vibrant workplaces where every employee can maintain their physical and emotional health.	Multi-week mindfulness series for clinicians upon medical center director's request. Specializes in resiliency, secular mindfulness, emotional intelligence.	866-229-3507 Pittsburgh, PA 15219 http://workpartners.com

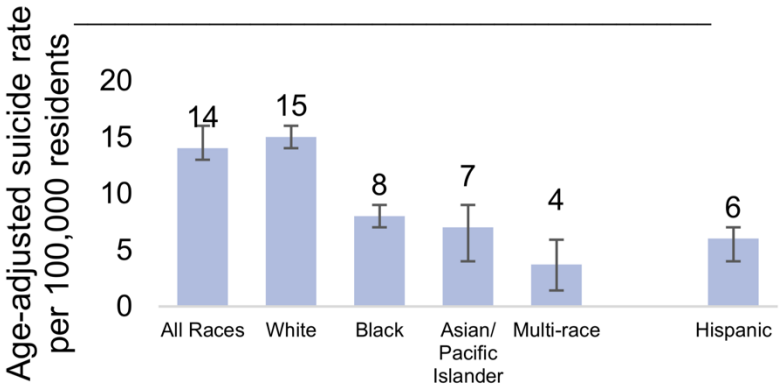
UPMC Carlisle “Zen Rooms”	Provide a safe, relaxing environment in which workers may take brief breaks from their work routines in order to maintain their emotional health.	One room on each floor of the hospital. Each room is equipped with comfortable chairs, massage equipment, and essential oil diffusors.	717-249-1212 Carlisle, PA 17015

Appendix C Staff Assessment Results

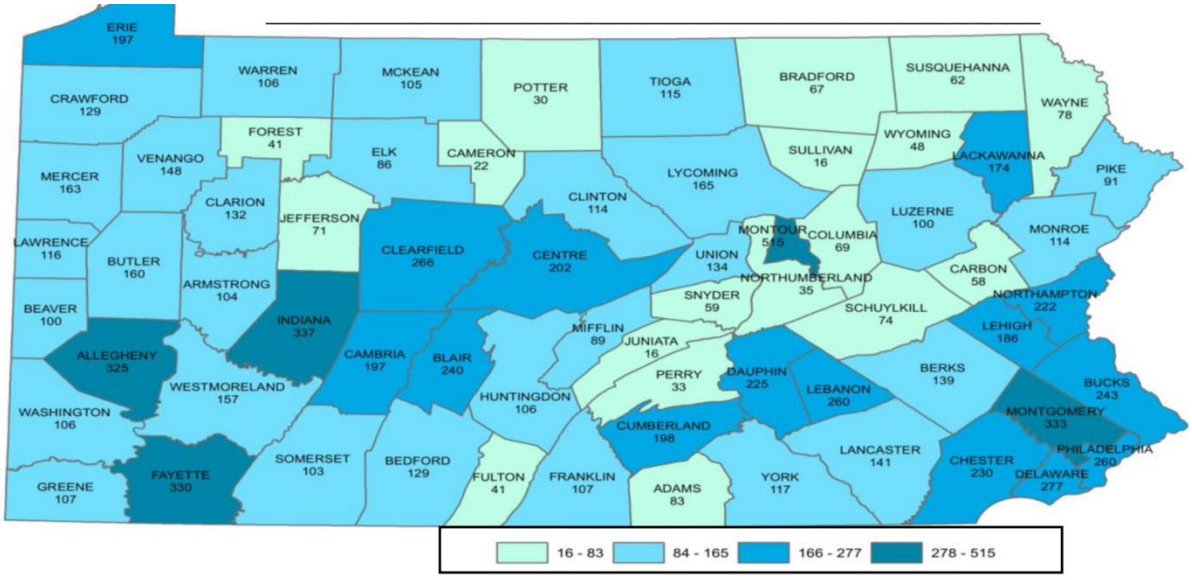


Appendix Figure 1. Adults Reporting "Not Good" Mental Health for 14+ Days in Past Month in Pennsylvania, 2020

*Graphs in this appendix all courtesy of Pennsylvania Department of Health, 2021



Appendix Figure 2. Suicide by Race and Ethnicity in Pennsylvania, 2019



Appendix Figure 3. Ratio of Mental Health Providers per 100,000 People, 2019

Appendix D Root Causes

Appendix Table 8

Primary Root Causes	**References**
Worker shortage	Yu, F., Raphael, D., Mackay, L., Smith, M., & King, A. (2019). Personal and work-related factors associated with nurse resilience: A systematic review. International Journal of Nursing Studies, 93, 129-140. doi:https://doi.org/10.1016/j.ijnurstu.2019.02.014
COVID-19: uncertainty, exposure to infected patients, and personal infection	Jeppson, Jacob. "Clinician Burnout 2021: Klas Report." *Clinician Burnout 2021 | KLAS Report*, KLAS Research, 3 Dec. 2021, https://klasresearch.com/report/clinician-burnout-2021-covid-19-increasingly-cited-in-rising-burnout/2080.
Long and unpredictable work hours	Bagheri Hosseinabadi , M., Ebrahimi, M. H., Khanjani, N., Biganeh, J., Mohammadi, S., & Abdolahfard, M. (2019, January 7). The effects of amplitude and stability of circadian rhythm and occupational stress on burnout syndrome and job dissatisfaction among irregular shift working nurses. Journal of Clinical Nursing. Retrieved May 21, 2022, from https://pubmed.ncbi.nlm.nih.gov/30653765/

Preexisting mental or physical illness	Young, K. P., Kolcz, D. L., O'Sullivan, D. M., Ferrand, J., Fried, J., & Robinson, K. (2021). Health care workers' mental health and quality of life during COVID-19: Results from a mid-pandemic, national survey. *Ps, 72*(2), 122-128. doi:10.1176/appi.ps.202000424

Appendix Table 9

Secondary Root Causes	References
Feeling of being stigmatized or abandoned	Chew QH, Wei KC, Vasoo S, et al. Psychological and coping responses of health care workers toward emerging infectious disease outbreaks: a rapid review and practical implications for the COVID-19 pandemic. J Clin Psychiatry. 2020;81(6):20r13450.
Lack of social support	Fang, XH., Wu, L., Lu, LS. *et al.* Mental health problems and social supports in the COVID-19 healthcare workers: a Chinese explanatory study. *BMC Psychiatry* **21,** 34 (2021). https://doi.org/10.1186/s12888-020-02998-y
Increased workload	Huhtala, M., Geurts, S., Mauno, S., & Feldt, T. (2021, May 28). *Intensified job demands in healthcare and their consequences for ...* Journal of Advanced

	Nursing. Retrieved May 20, 2022, from https://onlinelibrary.wiley.com/doi/10.1111/jan.14861
Lack of Motivation	Buran, F., & Altın, Z. (2021). Burnout among physicians working in a pandemic hospital during the COVID-19 pandemic. Legal Medicine, 51, 101881. doi:https://doi.org/10.1016/j.legalmed.2021.101881
Maladaptive Coping	Smallwood, N., Karimi, L., Pascoe, A., Bismark, M., Putland, M., Johnson, D., . . . Willis, K. (2021). Coping strategies adopted by Australian frontline health workers to address psychological distress during the COVID-19 pandemic. General Hospital Psychiatry, 72, 124-130. doi:https://doi.org/10.1016/j.genhosppsych.2021.08.008
Emotional Insecurity	Vizheh, M., Qorbani, M., Arzaghi, S.M. et al. The mental health of healthcare workers in the COVID-19 pandemic: A systematic review. J Diabetes Metab Disord 19, 1967–1978 (2020). https://doi.org/10.1007/s40200-020-00643-9
External Locus of Control	Alfuqaha OA, Al-olaimat Y, Abdelfattah AS, Jarrar RJ, Almudallal BM, Abu ajamieh ZI. Existential Vacuum and External Locus of Control as Predictors

	of Burnout among Nurses. Nursing Reports. 2021; 11(3):558-567. https://doi.org/10.3390/nursrep11030053

Appendix E Evaluation Plan Table

Appendix E.1 Brief Nursing Stress Scale (BNSS)

How often do you meditate with your unit during the 2-minute meditations at the beginning of your shifts? – Never | Occasionally | Almost Every Shift | Every Shift

How often do you take your scheduled breaks? – Never | Occasionally | Almost Every Shift | Every Shift

Below is a list of situations that commonly occur on a hospital unit. For each item, indicate by means of a check how often on your present unit you have found the situations to be overly stressful. Your responses are strictly confidential.

Appendix Table 10

Please indicate how frequently you suffer…	**Never (1)**	**Occasionally (2)**	**Frequently (3)**	**Almost always (4)**
Stressful situations derived from the process of dying or death				
Stressful situations derived from conflicts with doctors				
Stressful situations derived from lack of support				

Stressful situations derived from conflict between nurses				
Stressful situations derived from workload				
Stressful situations derived from the uncertainty of the treatment				

Courtesy of Sansó et al., 2021.

Appendix E.2 Professional Fulfillment Index (PFI)

Appendix Table 11

How true do you feel the following statements are about you at work during the past two weeks?	**Not true at all Score=0**	**Somewhat true Score=1**	**Moderately true Score=2**	**Very true Score=3**	**Completely true Score=4**
I feel happy at work					
I feel worthwhile at work					
My work is satisfying to me					
I feel in control when dealing with difficult problems at work					
My work is meaningful to me					

I'm contributing professionally (e.g. patient care, teaching, research, and leadership) in the ways I value most					

To what degree have you experienced the following?

Appendix Table 12

During the past two weeks, I have felt…	**Not at all Score=0**	**Very little Score=1**	**Moderately Score=2**	**A lot Score=3**	**Extremely Score=4**
A sense of dread when I think about work I have to do					
Physically exhausted at work					
Lacking in enthusiasm at work					
Emotionally exhausted at work					
Less empathetic with my patients					
Less empathetic with my colleagues					
Less sensitive to others' feelings/emotions					

Less interested in talking with my patients					
Less connected with my patients					
Less connected with my colleagues					

Courtesy of Trockel et al., 2018.

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