



HEROES HEALTH INITIATIVE INFORMATION PACKET

YOUR WORKFORCE IS DOING SO MUCH FOR OTHERS.
HEROES HEALTH IS TO SUPPORT *THEM*.

CURRENT AS OF JUNE 17, 2020

TABLE OF CONTENTS

What is the Heroes Health Initiative?.....	2
Description of Scoring and Measures	3
Resources Page.....	4
Example Reports.....	5
Example Employee Report	5
Example Institutional Mental Health Report	6
Example Department Leadership Report	7
Roles and responsibilities Agreements	8
Enrollment.....	10
Example Invitation from Organization to Workforce.....	10
Eligibility (completed in app)	12
Consent (completed in app).....	13
Contact and Sociodemographic Information	20
Initial Survey	22
Weekly Questionnaire.....	23
Depressive Symptom Screener (PHQ-2).....	23
Depression Severity (PHQ-9).....	24
Suicidal Ideation Screener	26
Anxiety Symptom Screener (GAD-2).....	27
Anxiety Symptom Severity (GAD-7).....	28
Role Functioning (WSAS)	29
Sleep Quality (PSQI component)	31
Posttraumatic Stress Disorder Screener (PCL-5 short form; 4-item)	32
Workplace Support and Personal Protective Equipment	33
Brief Resilient Coping Scale (BRCS).....	36
Full Protocol	37
Heroes Health Initiative Overview	37
Body of Protocol	39
References.....	48

WHAT IS THE HEROES HEALTH INITIATIVE?

Heroes Health is an ongoing health assessment tool for front line COVID-19 healthcare workers. Health assessments will be completed via a weekly, 5-minute smartphone-based survey. This health status survey will be consistent over time and will assess key health domains relevant to COVID-19 health care workers: sleep, posttraumatic stress, depression, anxiety, and perceived role functioning. Additionally, participants will be asked questions covering personal protective equipment (e.g., availability), COVID-19 case load (suspected/confirmed), personal infection status, and self-isolation from family.

Each week, unit and organization leaders at participating organizations and stakeholders will receive *de-identified* summary information regarding the health status of their COVID-19 frontline work force (e.g., ICU director gets summary of their ICU workers, Rhode Island Hospital leadership gets summary information on Rhode Island Hospital). These data will be delivered via standard automated reports.

In addition, each week the point person(s) within each organization, generally within the department of psychiatry, will receive information regarding frontline workers who have opted to share their responses and are demonstrating moderate-to-severe mental health symptoms. These individuals can be contacted for check-in and referral to local services as necessary. There is the capability over time to embed testing of resiliency/recovery interventions (e.g., web-based interventions).

Survey components will be updated during the pandemic to address new issues/evolving understanding, and will allow the identification of individual, unit, organizational, and regional factors associated with work force health status. Such information is critical to inform ongoing systems improvement and policy during this and future pandemics. After launch in the United States, the goal is to link to international partners via collaborations with the World Health Organization.



DESCRIPTION OF SCORING AND MEASURES

When COVID-19 frontline workers first arrive at the Heroes Health app welcome screen, they'll be given a brief introduction into the project followed by eligibility questions confirming that they are comfortable reading and writing in English, are at least 18 years of age, and currently working at a healthcare institution. Once determined eligible, participants will consent to participating in the project through the app interface. General contact and sociodemographic information will then be collected, including information about their unit and occupation at the institution. Following this, participants will be asked a few questions about their individual risk for COVID-19 and how the pandemic has affected their life. These will only be asked at the time of enrollment in the project. Afterwards, participants will be asked to answer weekly surveys of the same content for one year. The content of these weekly surveys will be consistent, and it will begin with the PHQ-2 to screen for depressive symptoms. If the participant scores greater than a two (2) on these questions, they will receive the remainder of the PHQ-9 survey to assess for depressive symptom severity, concluding with some questions about thoughts of suicide. Anyone expressing *any* suicidal ideation will be contacted by their institution or a project social worker. The clinical cutoffs used for the PHQ will be ≥ 5 = mild; ≥ 10 = moderate; ≥ 15 = moderately severe; ≥ 20 = severe depressive symptoms.

Participants will be screened for anxiety symptoms using the GAD-2 instrument. As with the depression assessment, participants will receive the full GAD-7 if they score greater than two (2) on the first two questions of the GAD survey in order to assess for severity of anxiety symptoms. The clinical cutoffs for the GAD will be ≥ 5 = mild; ≥ 10 = moderate; ≥ 15 = severe anxiety symptoms. Role functioning will be assessed using the WSAS instrument. Participants scoring ≥ 10 on the WSAS will be considered to have impaired functioning. The participant's sleep will be briefly assessed using a PSQI component, with scores greater than two (2) being considered poor sleep. The final psychological domain evaluated will be posttraumatic stress, and this will be done using a short-form PCL-5 instrument. Individuals with higher levels of symptoms will be included in weekly reports to partnering institutions (see Appendix III, Scoring and Reports). Finally, participants will be asked six short questions about their comfort level with PPE and workplace environment at their organization.

RESOURCES PAGE

[Introductory message written by institution to employees.]

If you are in a life-threatening emergency, please call 911.

ACCESS [ORGANIZATION NAME] RESOURCES

[\[Resources Compiled by Organization\]](#)

[Resource descriptions written by organizations]

[\[Resources Compiled by Organization\]](#)

[Resource descriptions written by organizations]

[\[Resources Compiled by Organization\]](#)

[Resource descriptions written by organizations]

ACCESS NATIONAL RESOURCES

[Crisis Text Line](#)

Dealing with anxiety, stress, or fear? Text FRONTLINE to 741741 to connect with a trained crisis counselor. Free, 24/7, confidential.

[Disaster Distress Helpline](#)

Call 1-800-985-5990 to get help and support for any distress that you or someone you care about may be feeling related to any disaster.

[2-1-1](#)

Call 2-1-1 to be connected to local social services.

EXAMPLE REPORTS

EXAMPLE EMPLOYEE REPORT

Heroes Health generates weekly symptoms reports for your employees, empowering them to identify changes in their wellness and seek help early.



CUT-OFF VALUES FOR PERSONALIZED REPORT

Feedback Values

Your sleep quality was (sleep PSQI)	Very good (0)	Fairly good (1)	Fairly bad (2)	Very bad (3)
Your feelings of sadness or depression were (PHQ)	None or minimal (0 – 4)	Mild (5 – 9)	Moderate (10 – 14)	Moderately Severe (15 – 19) Severe (20 – 27)
Your feelings of worry or anxiety were (GAD)	None or minimal (0 – 4)	Mild (5 – 9)	Moderate (10 – 14)	Severe (15 – 21)
Symptoms of posttraumatic stress were (PTSD, PCL-5)	None or minimal (0-5)		Present (6-11)	

Your limitations in day-to-day life due to your mental health were (WSAS)	None or mild (0 – 9)	Moderate (10 – 20)	Severe (21 – 40)
---	----------------------	--------------------	------------------

(Surveys not completed) Not completed

EXAMPLE INSTITUTIONAL MENTAL HEALTH REPORT

Mental health reports are securely distributed to organizations’ mental health outreach team via [Microsoft Teams](#). Below is a snapshot of what this report will include and how reports will be sorted and ordered.

SI Reported	High Symptom Burden	No Response to Suicide Questions	SI_risk	Q9	SI_Thought	SI_Likely	SI_Plan	Depression	Anxiety	PTS_Symptoms	Role_Functioning	Sleep	psy_total
Yes	Yes	0	High	Nearly every day	All or almost all of the time	Very likely	Yes	Moderate	Moderate	Present	Severe	Fairly good	66
Yes	No	1	High	Skipped	All or almost all of the time	Very likely	No	Moderate	Mild	None or minimal	Moderate	Fairly good	33
Yes	Yes	0	High	Several days	All or almost all of the time	Somewhat likely	Yes	Severe	Mild	Present	Moderate	Fairly bad	46
Yes	Yes	1	High	Skipped	All or almost all of the time	Somewhat likely	No	Severe	Mild	Present	Moderate	Very good	58
Yes	No	0	High	Several days	All or almost all of the time	Not very likely	No	Moderate	Mild	None or minimal	Moderate	Fairly good	40
Yes	No	0	High	Nearly every day	All or almost all of the time	Not very likely	No	Mild	Mild	None or minimal	Moderate	Fairly good	30

Flagging Rules:

- **Individuals need suicide intervention (SI Reported):** Q9 != None of the time [0] OR Q10 != None of the time [0] OR skipped both Q9 and Q10
- **Individuals need mental health intervention (High Symptom Burden):** severe symptoms on either Depression, Anxiety, PTSD or Role Functioning.

Ranking Rules:

- **Individuals need suicide intervention (SI Reported):**
 - Lowest rank: Thought = None of the time
 - Middle rank: Thought = (All or almost all of time | Most of the time | Some of the time | Prefer not to answer) AND Likely = Not at all likely AND Plan = No
 - Skipped rank: Skipped Q10(Thought)
 - Highest rank: Thought = (All or almost all of time | Most of the time | Some of the time | Prefer not to answer) AND !(Likely = Not at all likely AND Plan = No)
- **Individuals need mental health intervention(High Symptom Burden):** Ranked by the number of severe symptoms.

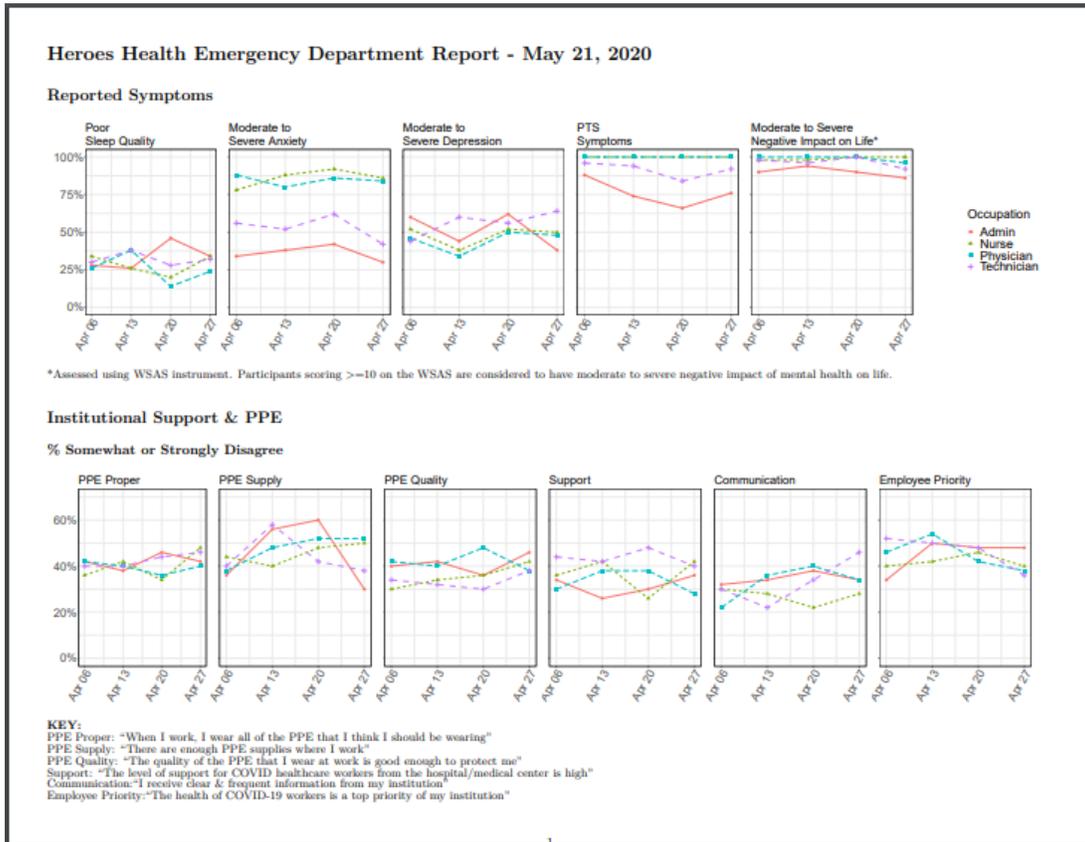
Individuals flagged will be those who demonstrate a high need for suicide or other mental health intervention, meaning that they have indicated suicidal ideation or else severe/life-threatening symptoms on either depression, anxiety, PTSD, or role functioning analyses.

The participants will be ranked with those who need suicide intervention at the top, with the frequency of suicidal thoughts determining who is highest on the list. These individuals will be followed by those who need other mental health intervention as they indicate a high symptom burden, again organized in descending order of highest to lowest burden.

See below for table demonstrating the flagging system for suicidal ideation:

	RESPONSE TRIGGERED IF				
Thoughts of killing self →	All	Most of	Some of	A little of	None of
Likelihood of action ↓	the time	the time	the time	the time	the time
Very likely	Y	Y	Y	Y	N
Somewhat likely	Y	Y	Y	Y	N
Not very likely	Y	Y	Y	Y, if plan	N
Not at all likely	Y, if plan	Y, if plan	Y, if plan	Y, if plan	N

EXAMPLE DEPARTMENT LEADERSHIP REPORT



ROLES AND RESPONSIBILITIES AGREEMENTS

This agreement is entered into by and between Heroes Health, a project within The Institute for Trauma Recovery (ITR) at the University of North Carolina – Chapel Hill, and Collaborating Institution. Both ITR and Collaborating Institution agree that UNC-Chapel Hill IRB will provide initial review and continuing oversight of the human subjects research protocol.

Through your institutional partnership with Heroes Health, the expectation will be that ITR will provide the downloadable mobile application made available to participants. This downloadable mobile application, including all programming, necessary updates, and functionality testing will be provided by ITR in collaboration with their partnership with Google. A description of the application and instructions for download will be made available to participants and the Collaborating Institution by the Heroes Health team at ITR.

ITR will be responsible for the collection of data through the application. Data from enrolled participants will be collected on a weekly basis, in the form of short surveys through the mobile application. Access to the mobile application will be controlled by a password, not contained on the device, assigned at registration. Response data will be submitted to ITR through the Study Response sub-system.

ITR will provide data to the Collaborating Institution in the form of weekly reports. The Collaborating Institution will receive aggregate weekly reports with information on the units of mental health. These reports will categorize information on how it compares to other units at the Collaborating Institution and same units at the Collaborating Institution. Additionally, ITR will provide the Collaborating Institution with Ad Hoc reports for worsening symptoms of their participating health care workers.

The Collaborating Institution will be responsible for identifying hospital-specific resources to be provided to all participants from their institution. For participants with worsening symptoms who have opted in to sharing this information, the Collaborating Institution will be responsible for contacting participants who meet the defined worsening symptoms thresholds established by ITR.

ITR will receive daily reports to screen for participants who endorse suicidal and/or homicidal ideation. Study coordinators at ITR will work with the Heroes Health Principal Investigator, Study Social Worker, and Collaborating Institution to facilitate contact with the participant in order to provide necessary resources. It is the responsibility of the Collaborating Institution to make contact with the enrolled participant who has been determined to be at high risk and provide necessary resources. It is not the responsibility of the Heroes Health team to ensure these resources are used by individuals participating in the Heroes Health initiative, and UNC-Chapel Hill is not liable for actions taken by participating individuals with or without the use of these resources.

A consortium of representatives from institutional partners, stakeholders, and investigators will be established for continued oversight. The Executive Committee will be comprised of investigators and a representative of the Google X team. The Steering Committee will be comprised of representatives from each participating institution, from funding partners, and leadership from other partnering teams.

ITR commits to providing the application, reports, and all other study related commitments outlined above for the period of one year after the participant consents to participate in Heroes Health. We will assess a participant's interest in continuing their participation at the end of the one-year period. In the event that a participant agrees to

continue participation past the one-year period, all commitments outlined above will apply until the termination of their participation.

ENROLLMENT

EXAMPLE INVITATION FROM ORGANIZATION TO WORKFORCE

Organizations will email their employees about the Heroes Health Initiative using an email like the one below.

Dear colleagues:

During these challenging times, it is important for all of us to keep an eye on our mental health and to get support when we need it. It is also important for us in leadership to understand how everyone is doing, so that if there are times during the next year when areas of [Organization name], or types of workers in an area, are getting overloaded (e.g., nurses in the [Organization unit name]), [Organization name] we know that and can try to help. Across the U.S. we have all seen how things can change very fast during this pandemic. It is also really valuable for [Organization name] to get ongoing feedback on our communication, support of you, and handling of PPE.

For all these reasons, [Organization name] joined Heroes Health, a program to support COVID-19 workers developed by a consortium of healthcare organizations and supported by foundation and tech partners including the Rockefeller Foundation and Google.

To join the program, download the Heroes Health app via the [App Store \(iPhone users\)](#) or the [Google Play Store \(Android users\)](#). You can continue reading for more information about Heroes Health or visit the program's website: heroeshealth.unc.edu.

Participation in the program is completely voluntary. To participate you would download the Heroes Health app and complete a 5- to 8-minute survey each week. Participation would have a number of benefits:

1. Each weekly survey includes a brief mental health symptom assessment and a simple summary report of symptoms to help you monitor your mental health during the pandemic. You are doing so much for others this year, the goal is to help you take care of you. The app also shows you trends in your mental health symptoms over time. The app provides information and links to key local and national mental health resources, including the confidential [Organization name] mental health support line. There are also links to free mental health apps and programs for COVID-19 workers, as well as information on current discounts on products and services for COVID-19 workers.
2. Group-level, de-identified mental health summary information from the [Organization unit name] would also be sent to [Organization unit name] and [Organization name] leadership each week. This is very helpful, because if there are any times during the next year where folks in the [Organization unit name] in general, or folks doing specific types of work (e.g., doctors, nurses, environmental services workers) are experiencing increasing stress, or other challenges, we want to know about it. Your individual information will never be shared with us, and group-level information for groups less than ten will never be shared, to make sure that your personal information remains anonymous.
3. The quick weekly survey you would complete also has questions about hospital communication and support, and how we are doing with PPE supplies, which is also very valuable for us to get feedback from you about. We know that conditions can change very quickly during this pandemic.

4. When you sign-up for the program, you also have the option to share your individual mental health survey responses in a confidential manner with a mental health worker in the department of psychiatry. If you choose to share your information, then your weekly mental health information will be shared confidentially only with individuals on this mental health team. Your weekly information will be treated with the same confidentiality as your medical record information, but it will not be part of your medical record. If you are having symptoms, this support team will try to reach out to offer support (for example, to see if they could suggest an app to help with sleep, or a mindfulness app, or set you up with a telehealth appointment, etc.).

Being in the Heroes Health Initiative is completely voluntary, and your participation is anonymous. We think this is a great way for us to support each other, take care of ourselves, and communicate with one another. To join the program, download the Heroes Health app via the [App Store \(iPhone users\)](#) or the [Google Play Store \(Android users\)](#).

Sincerely,

[Unit leaders and/or hospital leaders]

ELIGIBILITY (COMPLETED IN APP)

Once the app has been downloaded, interested healthcare workers will be guided through eligibility, consent, and onboarding questions.

1. Are you comfortable reading and writing in English?
 - Yes [Continue]
 - No [Screen out]
2. Are you 18 years of age or older?
 - Yes [Continue]
 - No [Screen out]
3. Do you currently work at a healthcare institution?
 - Yes [Continue]
 - No [Screen out]

CONSENT (COMPLETED IN APP)

University of North Carolina at Chapel Hill

IRB Study #: 20-0823

Title of Study: Heroes Health Initiative: Supporting Healthcare Workers during the COVID-19 Pandemic

Principal Investigator: Samuel McLean, MD, MPH

Study Email: heroeshealth_support@unc.edu

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

You are being asked to participate in a research study. It's important that you understand your rights and protections as a research participant prior to consenting to Heroes Health. Select "Learn more" to read the full consent form.

[Learn more](#)

CONCISE SUMMARY

The purpose of Heroes Health is to support individuals who work in organizations that provide medical, rehabilitative, and/or long-term care during the COVID-19 pandemic. If you choose to participate in Heroes Health, you can download the free Heroes Health app from the Google Play or Apple App Store. You will receive a brief, 5- to 10-minute survey each week and can participate for the duration of the COVID-19 pandemic. The app will summarize your mental health information for you and provide you with relevant mental health resources. If your organization is partnering with Heroes Health, leadership will receive group level, anonymous reports of how workers are doing. Optionally, you can have your identified answers sent to a mental health team to reach out to you if you experience significant mental health symptoms. The potential benefit of participation is easier access to mental health support. There are many mechanisms in place to protect your data, but there is a risk of a loss of confidentiality.

HOW IS HEROES HEALTH A RESEARCH STUDY, AND WHY DO I NEED TO CONSENT?

The primary purpose of the Heroes Health initiative is to support individuals who work in organizations that provide medical, rehabilitative, and/or long-term care during the COVID-19 pandemic. However, because an initiative like this during the COVID pandemic hasn't been done before, it's also considered research. Research presentations or publications may be reported from the Heroes Health Initiative, but these presentations or publications would summarize information from many hundreds, or thousands, of users together, and would never include identifying information such as your name, email address, or phone number. Nobody would ever be able identify you or your data from any kind of research report, or tell that you were in the study. The purpose of any research reports done from the Heroes Health Initiative is to try to help healthcare workers in the future, for example in future pandemics or natural disasters.

WHAT ARE SOME GENERAL THINGS YOU SHOULD KNOW ABOUT RESEARCH STUDIES?

You are being asked to take part in a voluntary research study. You may choose not to participate, or you may withdraw your consent to be in the study, for any reason, without penalty. It is important that you understand the study so that you can make an informed choice about being in the study.

HOW MANY PEOPLE WILL TAKE PART IN THIS STUDY?

Tens of thousands of healthcare workers around the US are anticipated to use the Heroes Health app.

WHAT DOES THE HEROES HEALTH APP DO?

The purpose of the app is to assist you with checking on your mental health during this stressful time, and to assist you with finding resources and support. Each week the app prompts you to complete a 5-10 minute mental health symptom check on things like sleep, stress, and anxiety/worry. After this symptom check, you can view a summary report of your symptoms in the "Reports" tab, along with trends in your mental health symptoms over time. In the "Resources" tab, you can click on links to get immediate support and other mental health resources. One resource listed in the "Resources" tab is the Heroes Health website, where you can find other mental health resources, for things like sleep and stress. This resource list focuses on resources that are either free or offered at reduced costs to healthcare workers. You can also find a list of free or discounted goods and services to healthcare workers. Importantly, Heroes Health receives no financial benefit or support from the goods or services listed. Our only goal is to list resources that might be of use to you.

AT ORGANIZATIONS THAT PARTNER WITH HEROES HEALTH, WHAT ELSE CAN THE APP DO?

If your organization is partnering with Heroes Health, or partners in the future, the initiative also supports you in several other ways. Partnering organizations are listed below and on heroeshealth.unc.edu:

- University of North Carolina at Chapel Hill

(If your organization is not partnering with Heroes Health and you would like them to join, you can ask them to email Heroes Health at heroeshealth_support@unc.edu.)

IF YOUR ORGANIZATION IS PARTNERING WITH HEROES HEALTH

Healthcare organizations often don't have information on the mental health of their workers. How are different types of workers in different areas of the hospital doing, and how are things changing over time? As we have all experienced, during the COVID-19 pandemic, situations in different work areas can change very quickly. If your organization is partnering with Heroes Health, each week anonymous, group-level reports from all workers will be shared with unit and institutional leaders. (Importantly, to ensure worker anonymity, no information for any group size less than 10 will ever be shared.) This can be valuable information to help a community to take care of one another. In addition, weekly survey items also allow workers to give frequent feedback on their quality and quantity of their PPE, on worker support, and on organizational communication to unit and institutional leaders.

COVID-19 has resulted in more strain and demands on healthcare workers than ever before. Many healthcare organizations are looking for ways to try to help support their workers. Organizations partnering with Heroes Health designate one or more mental health support workers. At the time that you download the Heroes Health app and complete the sign-up process, and every few months after that, you will be asked if you would like to confidentially share your individual mental health responses with this worker. If you choose to do this, then your responses would be shared confidentially with this mental health worker. Your app responses would only be shared with this worker/team, and would not be part of your medical record, but would be treated with the same confidentiality as your medical record. If you share this information, and you are having mental health symptoms, this mental health worker might contact you by text or phone call to offer thanks and support. For example, to offer a conversation, or a good app free

to COVID-19 workers that helps with sleep or stress, or help setting up an appointment with a mental health professional. If your organization is partnering with Heroes Health, the contact number for this mental health support worker/worker team is also listed in this app, and you can call them any time during the hours listed, for confidential support and resources. They are there to help you!

If you choose to share your app responses, and you are having symptoms, you may be contacted by a mental health support worker (MHSW) by text or phone. In addition, even if you choose not to share your responses, if you report severe/life-threatening symptoms a MHSW may still reach out.

IF YOUR ORGANIZATION IS NOT PARTNERING WITH HEROES HEALTH

The Heroes Health app is free to individuals who work in organizations that provide medical, rehabilitative, and/or long-term care during the COVID-19 pandemic, anywhere in the US. Because the app is designed to be used by tens or hundreds of thousands of users, and to rapidly scale during the pandemic, individual symptom reports are not assessed, and no mental health support workers will contact you based on symptoms. However, within the “Resources” tab of the app, the first two resources listed provide immediate connection to a crisis support counselor, anytime of the day or night, by phone or text, if you ever feel like you need to talk to someone immediately. In addition, you can contact the 211 resource in the resource list to get help accessing mental health services close to you, and to get help accessing other kinds of support.

WHAT ARE THE POSSIBLE BENEFITS FROM BEING IN HEROES HEALTH?

POSSIBLE BENEFITS TO ALL PARTICIPANTS:

The purpose of the app is to assist you with checking on your mental health during this stressful time, and to assist you with finding resources and support. Each week the app prompts you to complete a 5- to 10-minute mental health symptom check on things like sleep, stress, and anxiety/worry. After this symptom check, you can view a summary report of your symptoms in the “Reports” tab, along with trends in your mental health symptoms over time. In the “Resources” tab, you can click on links to get immediate support and other mental health resources. One resource listed in the “Resources” tab is the Heroes Health website, where you can find other mental health resources, for things like sleep and stress. This resource list focuses on resources that are either free or offered at reduced costs to healthcare workers. You can also find a list of free or discounted goods and services to healthcare workers. Importantly, Heroes Health receives no financial benefit or support from the goods or services listed. Our only goal is to list resources that might be of use to you. Remember, for individuals whose organizations are not partnering with Heroes Health, the goal is to provide an app that helps you track your mental health, and to help you immediately connect to resources and find resources. The data you enter is not reviewed, and you will never be contacted individually.

POSSIBLE BENEFITS TO PARTICIPANTS AT ORGANIZATIONS PARTNERING WITH HEROES HEALTH:

Healthcare organizations often don't have information on the mental health of their workers. How are different types of workers in different areas of the hospital doing, and how are things changing over time? As we have all experienced, during the COVID-19 pandemic situations in different work areas can change very quickly. If your organization is partnering with Heroes Health, each week anonymous, group-level reports from all workers will be shared with unit and institutional leaders. (Importantly, to ensure worker anonymity, no information for any group size less than 10 will ever be shared.) This can be valuable information to help a community to take care of one other. In

addition, weekly survey items also allow workers to give frequent feedback on their quality and quantity of their PPE, on worker support, and on organizational communication to unit and institutional leaders.

COVID-19 has resulted in more strain and demands on healthcare workers than ever before. Many healthcare organizations are looking for ways to try to help support their workers. Organizations partnering with Heroes Health designate one or more mental health support workers. At the time that you download the Heroes Health app and complete the sign-up process, and every few months after that, you will be asked if you would like to confidentially share your individual mental health responses with this worker. If you choose to do this, then your responses would be shared confidentiality with this mental health worker. Your app responses would only be shared with this worker/team, and would not be part of your medical record, but would be treated with the same confidentiality as your medical record. If you share this information, and you are having mental health symptoms, this mental health worker might contact you by text or phone call to offer thanks and support. For example, to offer a conversation, or a good app free to COVID-19 workers that helps with sleep or stress, or help setting up an appointment with a mental health professional.

If your organization is partnering with Heroes Health, the contact number for this mental health support worker/worker team is also listed in this app, and you can call them any time during the hours listed, for confidential support and resources. They are there to help you!

If your organization is partnering with Heroes Health, and you choose to share your app responses, and you are having symptoms, you may be contacted by a mental health support worker by text or phone. In addition, if you choose not to share your responses, if your organization is partnering with Heroes Health and you report severe/life threatening symptoms the Mental Health Support Worker may still reach out by text or phone, to see how they could help.

WHAT ARE POSSIBLE RISKS OR DISCOMFORTS FROM BEING IN HEROES HEALTH?

We anticipate few risks in this study. Any time that you provide personal data, there is the risk of release of personal data. Protecting your data and privacy are a top priority of Heroes Health. A great many methods are used to protect the confidentiality of your data:

- To minimize the risk of a data breach, the Heroes Health application records your information using an ID number instead of your name.
- The app is password-protected (protecting you if your device is stolen), and none of your responses are stored on your device.
- All data is compartmentalized for maximum security.
- This means that your name and any information that could identify you is stored in a part of the server that is separate from where your survey answers are stored. The key that links the identifying information and survey responses is stored separately, and it can only be accessed by those who need it to generate the reports that are sent to the organization's mental health team.
- Data collected using the application are housed at the University of North Carolina at Chapel Hill on a secure server.
- This includes password protection, encryption, and daily backups.
- Only approved users have access, and that access is limited to only that necessary to perform individual job functions.
- Access to the databased requires two-factor authentication.

- Access to the mobile application will be controlled by a password, not contained on the device, that you will create during registration, so that there is two-factor authentication.
- The mobile application will only be able to submit response data to a specific sub-system on the study server. Therefore, if your device or any device involved in the study was stolen or hacked, no data, responses, or user information could be obtained.
- Server data is highly compartmentalized for maximal security, with user information and response data stored in completely different subsystems, with many layers of system protection.
- Google is providing free technology for the Initiative but has no access to the data.
- Participants will not be identified in any report or publication about this study. We may use de-identified data from this study in future research without additional consent.

Although every effort will be made to keep research records private, there may be times when federal or state law requires the disclosure of such records, including personal information. This is very unlikely, but if disclosure is ever required, UNC-Chapel Hill will take steps allowable by law to protect the privacy of personal information. In some cases, your information in this research study could be reviewed by representatives of the University, research sponsors, or government agencies (for example, the FDA) for purposes such as quality control or safety.

YOUR INFORMATION IS PROTECTED BY A CERTIFICATE OF CONFIDENTIALITY

This research is covered by a Certificate of Confidentiality. With this Certificate, the researchers may not disclose or use information, documents or biospecimens that may identify you in any federal, state, or local civil, criminal, administrative, legislative, or other proceedings in the United States, for example, if there is a court subpoena, unless you have consented for this use. The Certificate cannot be used to refuse a request for information from personnel of a federal or state agency that is sponsoring the study for auditing or evaluation purposes or for information that must be disclosed in order to meet the requirements of the federal Food and Drug Administration (FDA). The Certificate of Confidentiality will not be used to prevent disclosure as required by federal, state, or local law, such as mandatory reporting requirements for child abuse or neglect, disabled adult abuse or neglect, communicable diseases, injuries caused by suspected criminal violence, cancer diagnosis or benign brain or central nervous system tumors or other mandatory reporting requirement under applicable law. The Certificate of Confidentiality will not be used if disclosure is for other scientific research, as allowed by federal regulations protecting research subjects or for any purpose you have consented to in this informed consent document.

You should understand that a Certificate of Confidentiality does not prevent you from voluntarily releasing information about yourself or your involvement in this research. If an insurer, employer, or other person obtains your written consent to receive research information, then the researchers may not use the Certificate to withhold that information.

HOW TO STOP PARTICIPATING IN HEROES HEALTH

You can leave this study at any time by clicking "Leave Study" in the app or simply deleting the app. Any data obtained will remain in the study. Heroes Health is free to use, and you will not be paid for participating.

WILL YOU RECEIVE ANYTHING OR IS THERE ANY COST FOR BEING IN HEROES HEALTH?

You will receive no monetary payment for being in Heroes Health. There are no costs associated with being in Heroes Health.

Questions?

You have the right to have answered questions you have about Heroes Health.

You can email heroeshealth_support@unc.edu. For questions about your rights as a participant in Heroes Health, call the Institutional Review Board at 919-966-3113 or email at IRB_subjects@unc.edu.
What if you have questions about your rights as a research participant?

All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns, or if you would like to obtain information or offer input, please contact the Institutional Review Board at 919-966-3113 or by email at IRB_subjects@unc.edu.

CONCISE SUMMARY

The purpose of Heroes Health is to support individuals who work in organizations that provide medical, rehabilitative, and/or long-term care during the COVID-19 pandemic. If you choose to participate in Heroes Health, you can download the free Heroes Health app from the Google Play or Apple App Store. You will receive a brief, 5- to 10-minute survey each week and can participate for the duration of the COVID-19 pandemic. The app will summarize your mental health information for you and provide you with relevant mental health resources. If your organization is partnering with Heroes Health, leadership will receive group level, anonymous reports of how workers are doing. Optionally, you can have your identified answers sent to a mental health team to reach out to you if you experience significant mental health symptoms. The potential benefit of participation is easier access to mental health support. There are many mechanisms in place to protect your data, but there is a risk of a loss of confidentiality

AUTHORIZATION FOR USE AND DISCLOSURE OF HEALTH INFORMATION FOR RESEARCH

You are being asked to sign a "HIPAA authorization." It is required by the Health Insurance Portability and Accountability Act of 1996 (HIPAA) in order for us to use information from the surveys you complete in the app. Select "Learn more" to read the full authorization.

[Learn more](#)

If you sign this HIPAA authorization form, you are giving your permission to give the researchers information obtained in the Heroes Health application. The HIPAA protections that apply to your medical records will not apply to information obtained from the app. Your information in the research study records may also be shared with, used by or seen by collaborating researchers, the sponsor of the research study, the sponsor's representatives, and certain employees of the University of North Carolina at Chapel Hill or other affiliated entities conducting the research, or government agencies if needed to oversee the research study. HIPAA rules do not usually apply to those people or groups. The informed consent document describes the procedures in this research study that will be used to protect your personal information. You can also ask the researchers any questions about what they will do with your personal information and how they will protect your personal information in this research study. If you want to participate in this research study, you must sign this HIPAA authorization form to allow the researchers access to data from your Heroes Health application. If you do not want to sign this HIPAA authorization form, you cannot participate in this research study. However, not signing the authorization form will not change your right to treatment, payment, enrollment, or eligibility for medical services outside of this research study. This HIPAA authorization will not stop unless you stop it in writing. You have the right to stop this HIPAA authorization at any time. You must do that in writing: (a) You may give

your written stop of this HIPAA authorization directly to the Principal Investigator or researcher, (b) You may mail it to the department mailing address listed at the top of this form, (c) Or you may give it to one of the researchers in this study and tell the researcher to send it to any person or group the researcher has given a copy of this HIPAA authorization. Stopping this HIPAA authorization will not stop information sharing that has already happened. You will be given a digital copy of this signed HIPAA authorization.

[I consent](#)

Name:

Touchscreen for signature

CONSENT TO SHARE DATA WITH INSTITUTIONAL MENTAL HEALTH TEAM

Do you want us to share your individual mental health information with your organization's Heroes Health mental health worker(s), so that they can try to contact you and offer support if you are experiencing symptoms? This information would be shared confidentially, would only be shared with this/these mental health worker(s), and would be treated with the same confidentiality as your medical record data.

- Share me data with my institution's mental health team and qualified researchers worldwide.
- Only share my data with researchers and not my institution's mental health team.

[Learn more](#): This information would be shared confidentially, would only be shared with this/these mental health worker(s), and would be treated with the same confidentiality as your medical record data.

MAY WE CONTACT YOU IN THE FUTURE ABOUT OTHER STUDIES RELATED TO THIS INITIATIVE?

- Yes
- No

First Name:

Last Name:

Date and Time Stamp: hh:mm [autopopulates]

eSignature:

CONTACT AND SOCIODEMOGRAPHIC INFORMATION

The first few questions ask for some information about you, your job, and your household.

1. First Name: _____
2. Last Name: _____
3. Work Email: _____
4. Cell Phone Number: _____
5. Zip Code: _____
6. Age: _____
7. Current Gender Identity
 - Man
 - Woman
 - Non-binary or another gender identity
 - Prefer not to answer
8. Current Marital Status
 - Married
 - Separated
 - Divorced/annulled
 - Widowed
 - Living with someone in a marriage-like relationship
 - Never been married
 - Prefer not to answer
9. What is the total number of persons currently living in your home? _____
10. [If Q9 > 0] How many of these individuals are your children (including step, adopted, and foster)?: _____
11. Healthcare system
 - University of North Carolina Health
 - Cooper University Hospital
 - Duke University Health
 - Indiana University Health
 - Rhode Island Hospital
 - Prefer not to answer
12. Which of the following best defines your occupation?
 - Administrator
 - Advanced practice provider (CRNA, NP, PA)
 - Case worker or social worker
 - Environmental services, maintenance, and/or facilities
 - Electrocardiogram (ECG/EKG) technician
 - Food services
 - Information technology (IT)
 - Law enforcement or security
 - Medical interpreter
 - Medical student
 - Nurse (LPN, RN)
 - Nursing or medical assistant (CNA, CMA) or patient care technician
 - Nursing student
 - Occupational or physical therapist (OT, PT)
 - Paramedic or emergency medical technician (EMT)
 - Patient transport or guest services
 - Pharmacist or pharmacy technician

- Phlebotomist
 - Physician — attending
 - Physician — resident or fellow
 - Radiology technician or sonographer
 - Respiratory therapist
 - Other, please specify: _____
13. Please choose your primary department
- Ambulatory Procedure Unit
 - Anesthesiology or Post-Anesthesia Care Unit
 - Burn Center
 - Cardiology
 - Clinical Decision Unit or Observation Unit
 - Coronary Care Unit (CCU)
 - Critical Care Medicine or Pulmonology
 - Emergency Department, Emergency Medicine, or Trauma
 - Family Medicine
 - Hematology or Oncology
 - Hospice or Palliative Care
 - Internal Medicine
 - Medical Unit
 - Neonatal Unit
 - Neurology
 - Obstetrics and Gynecology (OB/GYN) or Labor and Delivery (L&D)
 - Operating Room, Pre-Op, or Surgery
 - Orthopedics
 - Pathology
 - Pediatrics
 - Psychiatry
 - Radiology
 - Rheumatology
 - Urology
 - I work in multiple department
 - Other, please specify: _____

INITIAL SURVEY

1. Has **your own** health been affected by COVID-19 in any of these ways? (Check all that apply)
 - You had to be quarantined due to infection or suspected infection [1]
 - You were infected [2]
 - You were hospitalized [3]
 - None of the above [0]
 - Prefer not to answer [-999]

2. Has the health of **someone close to you** been affected by COVID-19 in any of these ways? (Check all that apply)
 - Someone close to you had to be quarantined due to infection or suspected infection [1]
 - Someone close to you was infected [2]
 - Someone close to you was hospitalized [3]
 - Someone close to you died [4]
 - None of the above [0]
 - Prefer not to answer [-999]

3. Are you more than 60 years old or do you have a pre-existing medical condition (for example, asthma, diabetes, or heart disease)?
 - Yes [1]
 - No [0]
 - Prefer not to answer [-999]

4. Do you normally live with someone who is more than 60 years old or has a pre-existing medical condition (for example, asthma, diabetes, or heart disease)?
 - Yes [1]
 - No [0]
 - Prefer not to answer [-999]

5. Have you changed your living arrangements during the pandemic? [check all that apply]
 - No change. [0]
 - I have changed how I interact with other people that I live with. [1]
 - I am living separately from a person or people that I normally live with. [2]
 - Prefer not to answer [-999]

WEEKLY QUESTIONNAIRE

The following questions are about how you have been feeling in the past week. Please select one response for each item.

DEPRESSIVE SYMPTOM SCREENER (PHQ-2)

All Participants

1. Over the past week, how often have you been bothered by **little interest or pleasure doing things**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

2. Over the past week, how often have you been bothered by **feeling down, depressed, or hopeless**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

DEPRESSION SEVERITY (PHQ-9)

Participants scoring >2 on PHQ-2 receive items 3-9

3. Over the past week, how often have you been bothered by **trouble falling or staying asleep, or sleeping too much**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

4. Over the past week, how often have you been bothered by **feeling tired or having little energy**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

5. Over the past week, how often have you been bothered by **poor appetite or overeating**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

6. Over the past week, how often have you been bothered by **feeling bad about yourself, that you are a failure, or that you have let yourself or your family down**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

7. Over the past week, how often have you been bothered by **trouble concentrating on things, such as reading the newspaper or watching television**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]

Prefer not to answer [-999]

8. Over the past week, how often have you been bothered by **moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around more than usual?**

Not at all [0]

Several days [1]

More than half the days [2]

Nearly every day [3]

Prefer not to answer [-999]

9. Over the past week, how often have you been bothered by **thoughts that you would be better off dead or hurting yourself?**

Not at all [0]

Several days [1]

More than half the days [2]

Nearly every day [3]

Prefer not to answer [-999]

SUICIDAL IDEATION SCREENER

Question 10 administered if response to PHQ question 9 "thought you would be better off dead question" is not "not at all" (i.e., response > 0)

10. In the past week, how often did you have thoughts of killing yourself?

- None of the time [0]
- A little of the time [1]
- Some of the time [2]
- Most of the time [3]
- All or almost all of the time [4]
- Prefer not to answer [-999]

Questions 11 and 12 both administered if response to question 10 is not "None of the time"

11. In the next 12 months, what is the likelihood that you will act on those thoughts of killing yourself?

- Not at all likely [0]
- Somewhat likely [2]
- Not very likely [1]
- Very likely [3]
- Prefer not to answer [-999]

12. Have you thought about how you might kill yourself (e.g., taking pills, shooting yourself) or worked out a plan of how to kill yourself?

- Yes [1]
- No [0]
- Prefer not to answer [-999]

ANXIETY SYMPTOM SCREENER (GAD-2)

All Participants

1. Over the past week, how often have you been bothered by **feeling nervous, anxious, or on edge**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

2. Over the past week, how often have you been bothered by **not being able to stop or control worrying**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

ANXIETY SYMPTOM SEVERITY (GAD-7)

Participants scoring >2 on GAD-2 receive items 3-7

3. Over the past week, how often have you been bothered by **worrying too much about different things**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

4. Over the past week, how often have you been bothered by **trouble relaxing**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

5. Over the past week, how often have you been bothered by **being so restless that it's hard to sit still**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

6. Over the past week, how often have you been bothered by **becoming easily annoyed or irritable**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

7. Over the past week, how often have you been bothered by **feeling afraid as if something awful might happen**?
 - Not at all [0]
 - Several days [1]
 - More than half the days [2]
 - Nearly every day [3]
 - Prefer not to answer [-999]

ROLE FUNCTIONING (WSAS)

All Participants

The following questions ask about how your mental health has affected your life during the past week.

1. Because of my mental health, **my ability to work** is impaired.
 - 0 – Not at all
 - 1
 - 2 - Slightly
 - 3
 - 4 - Definitely
 - 5
 - 6 – Markedly
 - 7
 - 8 – Very severely
 - Prefer not to answer

2. Because of my mental health, **my home management** (cleaning, tidying, shopping, cooking, looking after home or children, paying bills) is impaired
 - 0 – Not at all
 - 1
 - 2 - Slightly
 - 3
 - 4 - Definitely
 - 5
 - 6 – Markedly
 - 7
 - 8 – Very severely
 - Prefer not to answer

3. Because of my mental health, my **social leisure activities** (such as phone calls, video chat, or activities with other people) are impaired.
 - 0 – Not at all
 - 1
 - 2 - Slightly
 - 3
 - 4 - Definitely
 - 5
 - 6 – Markedly

- 7
- 8 – Very severely
- Prefer not to answer

4. Because of my mental health, my **private leisure activities** (done alone, such as reading, gardening, collecting, sewing, walking alone) are impaired.

- 0 – Not at all
- 1
- 2 - Slightly
- 3
- 4 - Definitely
- 5
- 6 – Markedly
- 7
- 8 – Very severely
- Prefer not to answer

5. Because of my mental health, my **ability to form and maintain close relationships with others**, including those I live with, is impaired.

- 0 – Not at all
- 1
- 2 - Slightly
- 3
- 4 - Definitely
- 5
- 6 – Markedly
- 7
- 8 – Very severely
- Prefer not to answer

SLEEP QUALITY (PSQI COMPONENT)

All Participants

1. During the past week, how would you rate your **sleep quality overall**?
 - Very good [0]
 - Fairly good [1]
 - Fairly bad [2]
 - Very bad [3]
 - Prefer not to answer [-999]

POSTTRAUMATIC STRESS DISORDER SCREENER (PCL-5 SHORT FORM; 4-ITEM)

Below is a list of problems that people sometimes have in response to stressful experiences like working in the COVID-19 pandemic. Please read each problem carefully and then select the response that best indicates how much you have been bothered by that problem in the past week.

1. In the past week, how much were you bothered by **suddenly feeling or acting as if you were reliving a past stressful experience** (as if you were actually back there reliving it)?
 - Not at all [0]
 - A little bit [1]
 - Moderately [2]
 - Quite a bit [3]
 - Extremely [4]
 - Prefer not to answer [-999]

2. In the past week, how much were you bothered by **avoiding external reminders of COVID-19** (for example, news related to COVID19 or conversations about COVID-19)?
 - Not at all [0]
 - A little bit [1]
 - Moderately [2]
 - Quite a bit [3]
 - Extremely [4]
 - Prefer not to answer [-999]

3. In the past week, how much were you bothered by **feeling distant or cut off from other people**?
 - Not at all [0]
 - A little bit [1]
 - Moderately [2]
 - Quite a bit [3]
 - Extremely [4]
 - Prefer not to answer [-999]

4. In the past week, how much were you bothered by **irritable behavior, angry outbursts, or acting aggressively**?
 - Not at all [0]
 - A little bit [1]
 - Moderately [2]
 - Quite a bit [3]
 - Extremely [4]
 - Prefer not to answer [-999]

WORKPLACE SUPPORT AND PERSONAL PROTECTIVE EQUIPMENT

All participants weekly after above items

1. In the past week, have you had direct contact with COVID-19 patients and/or their environment?
 - Yes [1]
 - No [0]
 - Prefer not to answer [-999]

2. [If YES to 1] 1a. What percent of your workdays this past week involved direct contact with COVID-19 patients or their environment?
 - 0-25% [1]
 - 26-50% [2]
 - 51-75% [3]
 - 76-100% [4]
 - Prefer not to answer [-999]

3. Regarding COVID-19, were you quarantined, tested, diagnosed, or isolated this past week?
 - Yes [1]
 - No [0]
 - Prefer not to answer [-999]

4. [If YES to 2] 2a. Check all that apply about what happened to you this past week.
 - I was quarantined due to a COVID-19 exposure. [1]
 - I was tested for COVID-19. [2]
 - I was diagnosed with COVID-19. [3]
 - I was in isolation due to COVID-19 diagnosis. [4]
 - None of the above. [0]
 - Prefer not to answer [-999]

Please select the response that best describes how much you agree or disagree with the following statements.

5. I am comfortable with the level of PPE supplies where I work.

- Strongly agree [1]
- Somewhat agree [2]
- Neither agree nor disagree [3]
- Somewhat disagree [4]
- Strongly disagree [5]
- Not applicable [-997]
- Prefer not to answer [-999]

6. The quality of the PPE that I wear at work is good enough to protect me.

- Strongly agree [1]
- Somewhat agree [2]
- Neither agree nor disagree [3]
- Somewhat disagree [4]
- Strongly disagree [5]
- Not applicable [-997]
- Prefer not to answer [-999]

7. When I work, I wear all of the PPE that I think I should be wearing.

- Strongly agree [1]
- Somewhat agree [2]
- Neither agree nor disagree [3]
- Somewhat disagree [4]
- Strongly disagree [5]
- Not applicable [-997]
- Prefer not to answer [-999]

8. The level of support for COVID healthcare workers from the institution is high.

- Strongly agree [1]
- Somewhat agree [2]
- Neither agree nor disagree [3]
- Somewhat disagree [4]
- Strongly disagree [5]
- Prefer not to answer [-999]

9. I receive clear and frequent information from my institution about their response to COVID-19.

- Strongly agree [1]



- Somewhat agree [2]
- Neither agree nor disagree [3]
- Somewhat disagree [4]
- Strongly disagree [5]
- Prefer not to answer [-999]

10. The health of COVID-19 healthcare workers is a top priority of my institution.

- Strongly agree [1]
- Somewhat agree [2]
- Neither agree nor disagree [3]
- Somewhat disagree [4]
- Strongly disagree [5]
- Prefer not to answer [-999]

BRIEF RESILIENT COPING SCALE (BRCS)

Questions one month after enrollment. Only given once.

Consider how well the following statements describe your behavior and actions.

1. I look for creative ways to alter difficult situations.
 - Does not describe me at all [0]
 - Does not describe me [1]
 - Neutral [2]
 - Describes me [3]
 - Describes me very well [4]
 - Prefer not to answer [-999]

2. Regardless of what happens to me, I believe I can control my reaction to it.
 - Does not describe me at all [0]
 - Does not describe me [1]
 - Neutral [2]
 - Describes me [3]
 - Describes me very well [4]
 - Prefer not to answer [-999]

3. I believe I can grow in positive ways by dealing with difficult situations.
 - Does not describe me at all [0]
 - Does not describe me [1]
 - Neutral [2]
 - Describes me [3]
 - Describes me very well [4]
 - Prefer not to answer [-999]

4. I actively look for ways to replace the losses I encounter in life.
 - Does not describe me at all [0]
 - Does not describe me [1]
 - Neutral [2]
 - Describes me [3]
 - Describes me very well [4]
 - Prefer not to answer [-999]

FULL PROTOCOL

HEROES HEALTH INITIATIVE OVERVIEW

1. ABSTRACT

Coronavirus disease 2019 (COVID-19) has challenged and at times overwhelmed medical systems throughout the globe (Roser et al., 2020). COVID-19 creates tremendous mental health challenges for individuals who work in facilities, clinics, and settings that provide medical, rehabilitative, and/or long-term care (“COVID-19 workers”). Quality improvement initiatives that help support the mental health of COVID-19 workers are urgently needed. Heroes Health is a quality improvement initiative founded by a healthcare worker and COVID-19 survivor. The program is completely voluntary and is free to COVID-19 workers.

Heroes Health supports COVID-19 worker mental health in several ways. COVID-19 workers who choose to participate in the program download the free Heroes Health app to their iOS or Android-compatible smartphone. The app notifies COVID-19 workers each week that a brief mental health assessment is available. After completing this assessment, a brief summary of their reported mental health is displayed in the app, along with trends in their reported mental health over time. In this way, the app helps workers monitor their mental health, in the same way that they might monitor their blood pressure. Importantly, the app also provides a link to crisis and mental health services, to help facilitate crisis support and mental health access. Download and use of the app is available to any COVID worker in the US.

For individuals who join the program through their institution, the app also helps workers in two other ways. First, group-level, anonymous information from all COVID workers at an institution are summarized each week for their institution’s leadership. This information will help leaders identify times during the pandemic, or during pandemic waves, when different types of workers/worker areas are experiencing high levels of mental health symptoms, creating the opportunity for institutional countermeasures. In addition, several questions about institutional communication and support will help institutional leaders assess need for countermeasures. Second, at the time of sign-up and every few months thereafter, workers who sign up through their institution will have the option to share their individual weekly results in a confidential manner with a mental health support worker at the institution. If an individual’s responses indicate that they are experiencing substantial thoughts of self-harm, they will be contacted by the institutional mental health worker. To the extent possible, this institutional mental health support worker will also attempt to contact other workers with symptoms, to offer them support and links to care. In addition, the institutional mental health support worker(s) designated for this program will serve as mental health resources for institutional COVID workers looking for advice on links to mental health care or other “over-the-counter” mental health supports (e.g., good sleep or mindfulness apps free to COVID workers). (Resource lists for COVID workers will be provided by Heroes Health to institutional mental health support workers, to assist them in this role.) In this way, these workers will offer mental health supports to COVID workers, in the same way that a community pharmacist might provide general health support to individuals in a community. Through these methods, the Heroes Health program seeks to support COVID-19 workers during the pandemic, improving mental health and reducing short and long-term worker burnout.

2. INITIATIVE DURATION

Heroes Health will begin in May 2020 and will continue for at least one year, depending on factors including duration of pandemic and utility of program to workers.

3. DATA COORDINATING CENTER

The University of North Carolina at Chapel Hill's Institute for Trauma Recovery will serve as the data coordinating center for Heroes Health.

4. PERSONNEL

4.1 PRINCIPAL INVESTIGATOR

Samuel A. McLean, MD, MPH

Jeffrey Hout Distinguished Investigator
UNC Anesthesiology Research

4.2 CO-PRINCIPLE INVESTIGATORS

Ronald C. Kessler, PhD

McNeil Family Professor
Harvard Medical School
Department of Health Care Policy

Kerry J. Ressler, MD, PhD

James and Patricia Poitras Chair in Psychiatry
McLean Hospital

4.3 CO-INVESTIGATORS

Christopher Jones, MD

Assistant Professor of Emergency Medicine
Cooper University Health Care

Karestan Chase Koenen, PhD

Professor of Psychiatric Epidemiology
Harvard T. H. Chan School of Public Health
Department of Epidemiology
Department of Social and Behavioral Sciences

Francesca Beaudoin, MD, PhD

Associate Professor of Emergency Medicine
Alpert Medical School of Brown University

Xinming An, PhD

Research Assistant Professor
UNC Anesthesiology Research

BODY OF PROTOCOL

1. SIGNIFICANCE

1.1 SIGNIFICANCE OF HEROES HEALTH INITIATIVE

1.1.1 COVID-19 WORKERS ARE AT INCREASED RISK OF ADVERSE MENTAL HEALTH.

COVID-19 creates mental health challenges for healthcare workers. These challenges include increased work hours, risk of personal infection and death, risk of infecting and killing loved ones, witnessing severe illness and death in COVID-19 victims, social isolation from friends and family to reduce infection risk, moral injury from witnessing patients in suboptimal conditions (e.g., COVID-19 patients dying isolated from family and friends, code teams wrestling to get in personal protective equipment to access a coding patient's room; Santarone et al., 2020; Cha, 2020). These extreme stressors have been shown to cause high rates of adverse mental health conditions in COVID-19 workers, including depression, anxiety, insomnia, and stress (Lai et al., 2020; Zhang et al., 2020). Quality improvement initiatives that support the mental health of COVID-19 workers are urgently needed.

1.2.2 THE HEROES HEALTH QUALITY IMPROVEMENT INITIATIVE SEEKS TO SUPPORT THE MENTAL HEALTH OF COVID-19 WORKERS AND REDUCE SHORT AND LONG-TERM BURNOUT.

The Heroes Health Initiative was founded by a healthcare worker and COVID-19 survivor. The initiative seeks to support COVID-19 workers in a number of ways. First, workers read a description of what the program is and, if interested, download the free Heroes Health app to their iOS or Android-compatible smart device. Workers who choose to participate provide informed consent and then complete an initial survey that includes individual contact information and basic worker information.

The app then notifies COVID-19 workers each week that a brief mental health assessment is available to complete. Participants complete this weekly 5- to 10-minute app-based assessment, which assesses key health domains relevant to COVID-19 healthcare workers: depression, anxiety, mental health interference with function, sleep, and stress. In addition, several questions assess workers' COVID-19 caseloads, satisfaction with current hospital efforts to provide PPE, current PPE quantity and quality, and current worker support and institutional communication. After completing this survey, a summary of reported symptoms is displayed in the app, along with trends in reported mental health over time. In this way, the app helps workers monitor their mental health in the same way that they might monitor their blood pressure. Importantly, at the end of each assessment, the app also provides links to crisis support and mental health services, to help facilitate access to care.

For individuals who join the program through a partnering institution (i.e. a healthcare entity with a signed institutional agreement with Heroes Health), the app also helps workers in several additional ways. First, group-level, anonymous information from all COVID workers at an institution are summarized weekly for their institution's leadership. This information will help leaders identify times during the pandemic, or during pandemic waves, when workers from different units or occupations are experiencing high levels of mental health symptoms, creating the opportunity for institutional countermeasures. In addition, several questions about institutional communication and support will help institutional leaders assess need for communication-specific countermeasures, which provide an opportunity to reduce worker stress, improve satisfaction, and reduce short-term and long-term burnout (Vermeir et al., 2018). Second, at the time of sign-up and every few months thereafter, workers who sign up through their institution will have the option to share their weekly symptom results in a confidential manner with a mental health

support worker at their institution. (All institutions who partner with the Heroes Health program are required to provide institutional mental health support worker(s) as a condition for partnership.) If an individual's responses indicate that they are experiencing substantial thoughts of suicide, they will be contacted by the institutional mental health worker within 24 hours of receipt. To the extent possible, this institutional mental health support worker will also attempt to contact other workers with mental health symptoms, to help them with support and links to care. In addition, the institutional mental health support worker(s) designated for this program will serve as mental health resources for institutional COVID workers looking for advice on links to mental health care or other "over-the-counter" mental health supports (e.g., vetted sleep or mindfulness apps free to COVID workers; resource lists for COVID workers will be provided by Heroes Health to institutional mental health support workers to assist them in this role). In this way, these workers will offer mental health supports to COVID workers, in the same way that a community pharmacist might provide general health support to individuals in a community.

Through all these methods, the Heroes Health program seeks to support COVID-19 workers throughout the COVID-19 pandemic, improving mental health and reducing short and long-term worker burnout. Finally, and relevant to this application, the utility of this quality improvement initiative will be assessed (e.g., proportion of workforce offered program who participate, retention over time, etc.). If it is useful, then similar programs may be valuable during future pandemics, natural disasters, etc.

1.2 PRIMARY AIM OF RESEARCH RELATED TO THIS QUALITY IMPROVEMENT INITIATIVE

Aim: To evaluate the utility of the Heroes Health Quality Improvement Initiative.

Aim 1.1: To assess use of the initiative by COVID-19 workers and retention in the program over time.

2. METHODOLOGY

2.1 SCREENING AND RECRUITMENT

2.1.1 RECRUITMENT VIA DIGITAL MEDIA OR AWARENESS CAMPAIGNS

Individual workers may learn of the program via digital media or other awareness campaigns. These digital media will direct interested healthcare workers to heroeshealth.unc.edu, which includes (1) an overview of the Heroes Health initiative, (2) a clear statement that participation is always voluntary, and (3) links to the Heroes Health application download for Android and iOS users.

2.1.2 RECRUITMENT VIA HEALTHCARE INSTITUTIONS

Institutions partnering with the initiative for their workers will also provide information to their institutional workers (i.e., via an introductory email). These introductory emails will include (1) an overview of the Heroes Health initiative, (2) a clear statement that participation is always voluntary, and (3) links to the Heroes Health mobile application download for Android and iOS users.

2.2 INCLUSION

Interested workers will download the free Heroes Health application to their smart device and respond to three brief questions that assess eligibility for the program: ability to read and write English, ≥ 18 years of age, and work in a facility, clinic, or organization that provides medical, rehabilitative, or long-term care. They will then automatically

be forwarded to the eConsent module. After reviewing the terms of consent, if the potential participant is willing to participate, the participant will enter their full name and their electronic signature.

2.3 VULNERABLE POPULATIONS

Participants will include populations of generally lower socioeconomic power, such as environmental services workers who clean COVID-19 patients' rooms. However, participation is completely voluntary, risks of participation are minimal, and assistance with resources and access to care may be particularly beneficial to this population.

2.4 INFORMED CONSENT

Consent is obtained at time of enrollment. A potential participant must provide consent in order to participate. As described above, interested participants access the eConsent module on the Heroes Health application. To facilitate smartphone-based consent, consent is present in summary sections, which participants can expand to view detailed information. Presenting consent information in this kind of summary-expandable format facilitates review and understanding in app-based studies, in which the amount of text that can appear on a smartphone screen is limited, and is increasingly used (Perrault & Keating, 2018) As described above, workers participating through their institution will additionally be asked if they would like to share their mental health symptom reports with an institutional mental health support worker, both at the time of enrollment and every few months thereafter.

2.5 INITIAL ASSESSMENT

Following successful consent, worker information will be collected including contact information (work email address, cell phone number, and zip code), demographic information (age, gender identity, marital status, number of people in household, number of children in household, healthcare system where employed, unit where employed, work type), COVID-19 infection status, and COVID-19 risk level (self and someone in household).

2.6 WEEKLY EVALUATIONS

2.6.1 METHOD AND TIMING OF DATA COLLECTION

Weekly assessments will be delivered via the Heroes Health application. Participants will be notified that a new weekly survey is available to complete via a push notification from the app.

2.6.2 WEEKLY ASSESSMENTS

Health outcomes data will be collected each week. The two-item Patient Health Questionnaire (PHQ-2; Spitzer, Kroenke, & Williams, 1999) will be used to screen for depressive symptoms. Participants with a score greater than two will complete the nine-item Patient Health Questionnaire (PHQ-9; Kroenke, Spitzer, & Williams, 2001) to assess depressive symptom severity, and will complete a 3-item suicide risk assessment from the Self-Injurious Thoughts and Behaviors Interview ("In the past week, how often did you have thoughts of killing yourself" and "Have you thought about how you might kill yourself (e.g. taking pills, shooting yourself) or worked out a plan of how to kill yourself?"; SITBI; Nock et al., 2007) and the P4 Screener ("In the next 12 months, what is the likelihood that you will act on those thoughts of killing yourself?"; Dube et al., 2010). Anxiety symptoms will be screened with the two-item Generalized Anxiety Disorder scale (GAD-2; Kroenke et al., 2007). Participants with a score greater than 2 will continue to the seven-item Generalized Anxiety disorder scale (GAD-7; Kroenke et al., 2007) to assess anxiety symptom severity. Perceived effects on the ability to function at work will be assessed using the Work and

Social Adjustment Scale (WSAS; Mundt et al., 2002). Sleep disturbance will be measured using a single question ("During the past week, how would you rate your sleep quality overall?") from the Pittsburgh Sleep Quality Index (PSQI; Buysse et al., 1988). Posttraumatic stress will be measured via a four-item version of the PTSD Checklist for DSM-5 (PCL-5; Zuromski et al., 2019). Additional items will help institutional leaders to assess worker status and needs over time. These items consist of questions regarding COVID-19 patient exposure, hospital efforts with PPE, PPE quantity and quality, institutional support, and institutional communication and worker prioritization.

2.6.3 BRIEF, 4-ITEM RESILIENCE ASSESSMENT

Several months after beginning the initiative, one of the weekly assessments will include a brief, 4-item resilience measure (Brief Resilient Coping Scale; Sinclair & Wallston, 2004). Understanding the association between responses to this scale and mental health of workers may assist with future worker support efforts. This brief assessment will only be administered one time.

2.7 PARTICIPANT RETENTION

Continued participation in the Heroes Health Initiative is voluntary. At the time of enrollment, we will collect participants' email addresses and phone numbers. When new surveys become available, participants will receive a push notification to their phone via the Heroes Health app. Participants whose surveys remain incomplete may receive additional push notifications to complete their surveys.

2.8 CRISIS INTERVENTION AND MENTAL HEALTH SUPPORT

At the end of each weekly assessment, immediate access to two well-respected crisis intervention services will be provided:

2.8.1 PHONE-BASED CRISIS INTERVENTION

The national United States [Disaster Distress Helpline](#), a 24-hour hotline supported by the Substance Abuse and Mental Health Services Administration (SAMHSA) with world-leading expertise in crisis support/assessment and suicide risk assessment. This service is a subset of the United States National [Suicide Prevention Lifeline](#).

2.8.2 TEXT/SMS-BASED CRISIS INTERVENTION

Crisis Text Line (<https://www.crisistextline.org>), an international, 24-hour hotline that offers text-based support, suicide risk assessment, and crisis intervention up to and including dispatch of emergency services for individuals expressing imminent risk of suicide.

Importantly, these support links will be offered to all those who complete surveys, as risk assessments such as those above are known to have low sensitivity or specificity for suicide intent (e.g., because suicidal individuals do not report their symptoms; Richards et al., 2019). In addition, other support links and services will be provided via the app and website (which will be a link from the app and will be continuously updated to reflect the best services currently available for COVID workers. Individuals who join the program via a participating institution will also receive links/phone numbers to institutional mental health resources. In addition, at participating institutions, institutional mental health support workers who choose to share their individual mental health assessments with a confidential institutional mental health support worker(s), and report symptoms will be contacted for support and possible connection to resources. (As described above, *all* workers reporting substantial thoughts of self-harm will be contacted by an institutional mental health worker within 24 hours of report receipt.) For workers who choose to share

their individual mental health data, these data will be treated with the same confidentiality as their medical record data. As noted above, Heroes Health is provided free to institutions, but institutions who participate in the program are required to have designated mental health support worker(s) for this initiative.

2.9 POPULATION TO BE RECRUITED

This initiative supports adults who work in facilities, clinics, or settings that provide medical, rehabilitative, or long-term care. Participants of all racial, ethnic, gender, and sexual orientation identities will be eligible for enrollment.

2.10 COHORT SIZE

There is no set limit on the number of Heroes Health participants. The initiative will scale up to as many institutions and participants as resources permit.

2.11 PARTICIPANT REMUNERATION

Participants in Heroes Health will not be compensated for participation.

2.12 DATA MANAGEMENT

2.12.1 MOBILE APPLICATION

Data will be collected from participants through the Heroes Health Initiative application, which participants will download to their smart devices. The mobile application used by participants to record their responses will store only the system user ID. Access to the mobile application will be controlled by a password, not contained on the device, assigned at registration. This achieves two-factor authentication. The mobile application will only be able to submit response data to the Study Response sub-system. Therefore, if the device is compromised, no participant data, responses, or user profile will be exposed. The mobile app will also ensure that the participant is using the latest version of the mobile application and has consented to the latest agreement.

2.12.2 PARTICIPANT IDENTIFICATION NUMBERS

Data collected from participants will be linked using a participant identification number. This ID will be a unique number generated and assigned at the time of participant enrollment in the project.

2.12.3 DATA STORAGE

Storing data that is collected from participants is an important concern and has been addressed in several ways. The lock-screens on participants' smart devices provide an initial barrier to breaches of data and are used by 72% of smartphone owners (Smith, 2017). Given the sensitive nature of the data that will be stored, the system has been designed with security and integrity of the data as a primary concern. UNC has established an active Business Associates Agreement with Google Inc. This allows the system to store and process ePHI within the Google Cloud Platform (GCP). Systems built within the GCP employ a shared responsibility model. That is, regulatory compliance of the underlying platform is ensured by Google Inc. while regulatory compliance of the implemented system itself is asserted by UNC. Details of the GCP compliance are found in the "Google Platform HIPAA overview guide" (Google Cloud, 2019). What follows corresponds to compliance of the system built within GCP.

Modern information technology security practice is based on the concept of least privilege and resource compartmentalization. Essentially, each user or process within the system should only have access to those data and

resources that are required to perform its function and no more. The architecture of the system is highly compartmentalized to reflect these principles. The system consists of three sub-systems: the Study Administration sub-system, the Study Coordination sub-system, and the Study Response sub-system. Access to these sub-systems is controlled according to specific roles assigned to users or processes.

The Study Administration sub-system is the primary software component involved in the design of the Heroes Health Initiative, the design of the reports produced from the data collected, and the presentation of these reports. Access to the Study Administration sub-system Study Design component is controlled by the Study Designer / Clinical Scientist role. Access to the Report Design component is controlled by the Report Designer / Clinical Statistician role. Access to the Report Presentation component is controlled by the Clinical Investigator role. The Study Design component stores no individual data and only stores data describing the design of the study. The Report Design component, similarly, stores no individual participant data and stores only algorithmic descriptions of the reports to be generated. For a report design to be published and the report to be produced from participant data, it must be approved by an individual with the Study Administrator role to ensure that no ePHI is exposed. The Report Presentation component then creates reports for the Clinical Investigator from the data stored in the Study Response sub-system. Access to any of the components of the Study Administration sub-system is through a two-factor authenticated web application.

The Study Coordination sub-system is the primary software component storing participant profiles. This is the only sub-system that contains directly individually identifiable data. It stores the linkage between the anonymous system user IDs for the participants and their identifiable information. Access to the Study Coordination sub-system is governed by the Study Coordinator role and is available through a two-factor authenticated web application.

The Study Response sub-system stores the actual participant responses associated only with anonymous system user IDs. Though these data are not necessarily directly individually identifiable, they are potentially deductively identifiable and therefore only accessible through approved reporting templates produced by the Report Designer / Clinical Statistician role, processed by the Study Administration sub-system, and made available to the Clinical Investigator role. There is no direct user access to data stored by this component.

In addition to these software sub-systems, a fourth sub-system, the Authentication sub-system, provides user authentication and role authorization for the entire system. This sub-system has no direct user access. Access to this system is controlled at the platform level by the System Administration / Security Officer role.

As detailed above, the mobile application used by Heroes Health Initiative participants to record their responses will store only the system user ID. The mobile app will also ensure that the participant is using the latest version of the mobile application and has consented to the latest agreement.

2.12.4 DATA SHARING

While data will be collected via the Heroes Health housed in the Google Cloud Platform, **Google Cloud or other external personnel will not have access to Heroes Health data stored on the cloud.**

2.12.4.1 DATA SHARING FOR PARTICIPANTS ENROLLED THROUGH THEIR ORGANIZATION

COVID workers who join the Heroes Health Initiative through a partnering organization (i.e. a healthcare entity with a signed institutional agreement with Heroes Health) will be given the opportunity to choose whether or not to share their survey results with a confidential institutional mental health worker. For workers who opt into

institutional data sharing, mental health survey results of those who are experiencing suicidal ideation or moderate-to-severe mental health symptoms will be available to institutional/organizational mental health worker(s) within 24 hours. These reports will be made available via secure delivery to a folder within Microsoft Teams and will allow partnered institutions to contact workers who are suffering and connect them with relevant resources and/or mental health care.

Every week, organizational and unit leaders will receive a report of *de*-identified, aggregate data on the wellness of their teams. The intention of this report is to aide institutions and units in developing resources tailored to the needs of their workforce. These reports will never contain reports on subgroups less than 10 workers, to protect worker anonymity (e.g., if there are less than 10 nurses reporting data within a particular unit, nurse-by-unit data will not be provided, and instead data will be provided at a higher level of aggregation).

2.12.4.2 DATA SHARING FOR PARTICIPANTS ENROLLED WITHOUT INSTITUTIONAL AFFILIATION

Participants who do not enroll through their institution will not have their data shared with healthcare institutions.

2.13 DATA ANALYSIS

Primary analyses will evaluate the feasibility and acceptability of the program, including use of the initiative by COVID-19 workers at partnering organizations and more generally, and retention in the program. Secondary analyses may include topics such as general mental health of COVID workers, changes in mental health status over time, and other uses of the data that may help to support health care worker mental health now or in the future.

3. RISKS AND BENEFITS

3.1 RISKS OF PARTICIPATION

Risks of participation in Heroes Health are low. It is possible that workers invited to participate via organizational leaders may feel pressure to participate, but communications will explain that participation in this COVID worker support program is voluntary, and that the institutional leadership will never receive information regarding which individuals are participating and which individuals are not participating. Additionally, participants will understand that no payments will be offered for their participation, removing the risk of financial pressures influencing participants' decision to enroll. Participants may experience feelings of discomfort when responding to questions in Heroes Health assessments. Completion of each survey question is voluntary, and "prefer not to answer" is a response option for all assessment questions. Participants will be informed that they can stop a particular assessment or participation in the entire program at any time. The risk of violation of confidentiality exists because participants are giving personal health information to assess and support their mental health. To minimize the risk to confidentiality, assessment data are always treated as confidential. All data will be entered and stored on the Google Cloud Platform, which is encrypted and housed on secure servers at Google, Inc. Personally identifying information and participant data will never be stored in the same physical location. In addition, because sensitive information is to be collected regarding participants' mental health, a Certificate of Confidentiality will be obtained after IRB approval. All research personnel involved in Heroes Health will have completed training in the protection of human research participants per the guidelines issued by the United States Department of Health and Human Services, Office for Human Research Protection. Training of staff will include information about the importance of confidentiality and techniques to maintain confidentiality of all information reported by research participants. All

research personnel will sign a pledge of confidentiality and understand that violation of confidentiality is reason for dismissal.

3.2 BENEFITS OF PARTICIPATION

3.2.1 DIRECT BENEFITS:

The Heroes Health quality improvement initiative may benefit participants in a number of ways:

1. Participants may benefit from the supportive, virtual space that Heroes Health creates for healthcare workers, including messages of appreciation and gratitude in invitations to participate and in weekly assessments.
2. Participants may benefit from being better able to assess and monitor their mental health, helping them to identify opportunities to improve their mental health, in the same way that a blood pressure screening or monitoring helps individuals to know when they would benefit from blood pressure treatment.
3. Participants may benefit from being provided immediate links to crisis support services, including via phone and text. The app will also provide links to other mental health resources. For workers who sign up via a partnering institution, these resources will be tailored to each institution's resources for workers. For individuals who choose to sign up independently, or who are affiliated with an institution/facility/clinic that is not a Heroes Health partner, these resources will provide links to the best resources nationally. These resources will be continuously updated, to reflect the best resources available and resources that are free of charge to COVID workers.
4. Participants joining through an institution may benefit from having their de-identified mental health data shared with unit/institutional leaders via weekly reports and data summaries. This information will provide leaders with opportunities to identify areas of the institution or types of workers who are under increasing strain during different phases of the pandemic, so that they have the opportunity to institute counter-measures at the unit or institutional level to support workers.
5. Participants joining through an institution may benefit from having their de-identified summary data regarding institution/organization efforts related to PPE, or issues with PPE, and assessments of hospital communication shared with organizational leaders. This information will provide leaders with opportunities to identify issues with PPE or communication that might benefit from further optimization, reducing stress on workers.
6. For workers who are affiliated with institutions/organizations who join the Heroes Health program, and who choose to share their individual survey data in a confidential manner with an institutional/organizational mental health support worker, they may benefit from being contacted if they are experiencing substantial thoughts of self-harm, and are assisted with crisis management and accessing care.
7. For workers who are affiliated with institutions/organizations who join the Heroes Health program, and who choose to share their individual survey data in a confidential manner with an institutional/organizational mental health support worker, they may benefit from being contacted if they are experiencing mental health symptoms, to be offered thanks for their work during the COVID pandemic to serve others, and offered support for their mental health and/or links to services. In additions to links to care, individuals who are having difficulty sleeping might be offered help and tips with sleep strategies, etc. Tip sheets and resources related to common mental health issues for COVID workers will be organized for institutional/organizational

mental health workers by the initiative, and will be shared and frequently updated across sites, and working groups will be comprised of mental health workers across institutions/organizations, who will have weekly calls to share ideas on how to best support workers.

8. Workers may benefit from having telephone access to contact the mental health support worker(s) at partnering institutions organized for this Initiative, to obtain their support in accessing care and to obtain advice on common mental health issues. In this way, these workers will offer mental health supports to COVID workers, in the same way that a community pharmacist might provide general health support to individuals in a community.

3.2.2 INDIRECT BENEFITS

Publications from the Heroes Health Initiative may indirectly benefit participants through knowledge generation that helps organizations improve future COVID worker/healthcare worker support efforts.

3.3 ADVERSE EVENTS

No substantial adverse events are anticipated related to this quality improvement effort. The app provides a comment function where individuals can provide anonymous feedback regarding the app, if difficulties or frustrations with the use of the app are encountered. Improving linkages and support for mental health services is the central goal of this initiative, and methods to do so are described above.

3.4 DATA SAFETY MONITORING PLAN

The central data coordinating center for the Initiative at UNC will obtain monthly de-identified data from partnering institutions/organizations which summarize results of their attempts to contact individuals at those institutions/organizations who express substantial suicidal ideation. These data will be reviewed by Dr. McLean and the site PI, to ensure that efforts are being made to contact all individuals in a timely manner and that a good organizational system to do this is in place.

3.5 PROTECTION OF HUMAN SUBJECTS

3.5.1 POTENTIAL RISKS

The safety of participants is of paramount importance to this endeavor. As participants may be uncomfortable answering some of the survey questions, participants are told they may choose not to answer any questions that cause discomfort. In addition, the risk of violation of confidentiality exists because human subjects are giving personal information. Procedures to minimize risks to confidentiality are described below.

3.5.2 CONFIDENTIALITY PROTECTIONS

There are many methods used to protect confidentiality. A Certificate of Confidentiality will be obtained from the NIH upon IRB approval. All research personnel will sign a pledge of confidentiality at the beginning of employment and understand that violation of confidentiality is reason for dismissal. For individuals who are affiliated with a partnering institution/organization and choose their survey results, these results will be shared folder in Microsoft Teams accessible only to organization designated mental health support worker(s), and will be treated with the same level of confidentiality as medical record data. Additional protections against the loss of confidentiality are described in detail in the data security section.

REFERENCES

- Buysee, D. J., Reynolds III, C. F., Monk, T. H., Berman, S. R., Kopfer, D. J. (1988). The Pittsburgh Sleep Quality Index: A new instrument for psychiatric practice and research. *Psychiatry Research*, 28(2), 193-213. doi: 10.1016/0165-1781(89)90047-4
- Cha, A. E. (2020, March 26). Hospitals consider universal do-not-resuscitate orders for coronavirus patients. Retrieved from <https://www.washingtonpost.com/health/2020/03/25/coronavirus-patients-do-not-resuscitate/>
- Dube, P., Kutty, K., Bair, M. J., Theobald, D., Williams, L. S. (2010). The P4 Screener: Evaluation of a brief measure for assessing potential suicide risk in 2 randomized effectiveness trials of primary care and oncology patients. *The Primary Care Companion to the Journal of Clinical Psychiatry*, 12(6), PCC.10m00978.
- Google Cloud. (2019, April). *Google Cloud Platform HIPAA overview guide*. <https://cloud.google.com/files/gcp-hipaa-overview-guide.pdf>
- Kroenke, K., Spitzer, R. L., Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606-613. doi: 10.1046/j.1525-1497.2001.016009606.x
- Kroenke, K., Spitzer, R. L., Williams, J. B. W., Monahan, P. O., Löwe, B. (2007). Anxiety disorders in primary care: Prevalence, impairment, comorbidity, and detection. *Annals of Internal Medicine*, 146(5), 317-325. doi: 10.7326/0003-4819-146-5-200703060-00004
- Lai, J., Ma, S., Wang, Y. Cai, Z., Wei, N., Wu, J., Du, H., Chen, T., Li, R., Tan, H., Kang, L., Yao, L., Huang, M. Wang, H., Wang, G. Hu, S. (2020). Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Network Open*, 3(3). doi: 10.1001/jamanetworkopen.2020.3976
- Moazzami, B., Razavi-Khorasani, N., Moghadam, A. D., Farokhi, E., & Rezaei, N. (2020). COVID-19 and telemedicine: Immediate action required for maintaining healthcare providers well-being. *Journal of Clinical Virology*, 126, 104345. doi: 10.1016/j.jcv.2020.104345
- Mundt, J. C., Marks, I. M., Shear, M. K., Greist, J. H. (2002). The work and social adjustment scale A simple measure of impairment in functioning. *The British Journal of Psychiatry*, 180(46), 1-4. doi: 10.1192/bjp.180.5.461
- Nock, M. K., Holmberg, E. B., Photos, V. I., Michel, B. D. (2007). The Self-Injurious Thoughts and Behaviors Interview: Development, reliability, and validity in an adolescent sample. *Psychological Assessment*, 19(3), 309-317.
- Perrault, E. K., & Keating, D. M. (2018). Seeking Ways to Inform the Uninformed: Improving the Informed Consent Process in Online Social Science Research. *Journal of Empirical Research on Human Research Ethics*, 13(1), 50–60. doi: <https://doi.org/10.1177/1556264617738846>
- Prins, A., Ouimette, P., Kimerling, R., Cameron, R. P., Hugelshofer, D. S., Shaw-Hegwer, J., Thrailkill, A., Gusman, F. D., Sheikh, J. I. (2003). The primary care PTSD screen (PC-PTSD): Development and operating characteristics. *Primary Care Psychiatry*, 9(1), 8-14. doi: 10.1185/135525703125002380
- Richards, J. E., Whiteside, U., Ludman, E. J., Pabiniak, C., Kirilin, B., Hidalgo, R., & Simon, G. (2018). Understanding Why Patients May Not Report Suicidal Ideation at a Health Care Visit Prior to a Suicide Attempt: A Qualitative Study. *Psychiatric Services*, 70(1), 40–45. doi: 10.1176/appi.ps.201800342

- Roser, M., Ritchie, H., Ortiz-Ospina, E., Hasell, J. (2020, March 4). *Coronavirus Disease (COVID-19) – Statistics and Research*. Our World in Data. <https://ourworldindata.org/coronavirus>
- Santarone, K., Mckenney, M., & Elkbulli, A. (2020). Preserving mental health and resilience in frontline healthcare workers during COVID-19. *The American Journal of Emergency Medicine*. doi: 10.1016/j.ajem.2020.04.030
- Sasangohar, F., Jones, S. L., Masud, F. N., Vahidy, F. S., Kash, B. A. (2020). Provider burnout and fatigue during the COVID-19 pandemic: Lessons learned from a high-volume intensive care unit. *Anesthesia and Analgesia*. Epub ahead of print. doi: 10.1213/ANE.0000000000004866
- Sinclair, V. G., Wallston, K. A. (2004). The development and psychometric evaluation of the Brief Resilient Coping Scale. *Assessment*, 11(1), 94-101. doi: 25814410.1177/1073191103258144
- Smith, A. (2017, January 26). Americans, password management and mobile security. Retrieved from <https://www.pewresearch.org/internet/2017/01/26/2-password-management-and-mobile-security/>
- Spitzer, R. L., Kroenke, K., Williams, J. B. W. (1999). Validation and utility of a self-report version of PRIME-MD. *Journal of the American Medical Association*, 282(18), 1737-1744. doi:10.1001/jama.282.18.1737
- Su, T., Lien, T., Yang, C., Su, Y. L., Wang, J., Tsai, S., Yin, J. (2007). Prevalence of psychiatric morbidity and psychological adaptation of the nurses in a structured SARS caring unit during outbreak: A prospective and periodic assessment study in Taiwan. *Journal of Psychiatric Research*, 41(1-2), 119-130. doi: doi.org/10.1016/j.jpsychires.2005.12.006
- Vermeir, P., Blot, S., Degroote, S., Vandijck, D., Mariman, A., Vanacker, T., Peleman, R., Verhaeghe, R., Vogelaers, D. (2018). Communication satisfaction and job satisfaction among critical care nurses and their impact on burnout and intention to leave: A questionnaire study. *Intensive & Critical Care Nursing*, 48, 21-27. doi: <https://doi.org/10.1016/j.iccn.2018.07.001>
- Zhang, C., Yang, L., Liu, S., Ma, S., Wang, Y., Cai, Z., Du, H., Li, R., Kang, L., Su, M., Zhang, J., Liu Z., Zhang, B. (2020). Survey of insomnia and related social psychological factors among medical staff involved in the 2019 novel coronavirus disease outbreak. *Frontiers in Psychiatry*, 11. doi: <https://doi.org/10.3389/fpsy.2020.00306>
- Zuromski, K. L., Ustun, B., Hwang, I., Keane, T. M., Marx, B. P., Stein, M. B. Ursano, R. J., Kessler, R. C. (2019). Developing an optimap short-form of the PTSD Checklist for DSM-5 (PCL-5). *Depression and Anxiety*, 36(9), 790-800. doi: <https://doi.org/10.1002/da.22942>