

## Original Research

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# Ensuring Safe and Effective Psychiatric Care in COVID-19 Alternate Care Sites

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## Abstract

**Objective:** This article describes an innovative program to provide safe, evidence-based psychiatric care at the Baltimore Convention Center Field Hospital (BCCFH), set up for COVID-19 patients, to alleviate overextended hospitals.

**Methods:** This article describes the staffing and workflows utilized at the BCCFH including universal suicide risk assessment and co-management of high acuity patients by an NP-led psychiatry service.

**Results:** The Columbia-Suicide Screening Rating Scale (C-SSRS) proved feasible as a suicide screening tool. Using the SAFE-T protocol, interdisciplinary teams cared for moderate and low risk patients. The NP psychiatry service evaluated over 70 patients, effecting medication changes in more than half and identified and transferred several decompensating patients for higher-level psychiatric care. Group therapy attendees demonstrated high participation. There were no assaults, self-harm incidents, or suicides.

**Conclusions:** The BCCFH psychiatry/mental health program, a potential model for other field hospitals, promotes evidence-based, integrated care. Emphasizing safety, including suicide risk, is crucial within alternate care sites during disasters. The engagement of dually-certified (psychiatric and medical) nurse practitioners boosts safety and provides expertise with advanced medication management and psychotherapeutic interventions. Similar future sites should be ready to handle chronically ill psychiatric patients, detect high-risk or deteriorating ones, and develop therapeutic programs for patient stabilization and support.

## Introduction

Alternate care sites (ACS) (i.e., field hospitals) are temporary sites set up to provide a range of medical and social services during pandemics and other disasters. Many such sites were set up to support hospitals at risk of being overwhelmed by COVID-19 admissions.<sup>1</sup> Although patients with pre-existing psychiatric disorders are more susceptible to COVID-19, which can in turn aggravate the severity of COVID-19,<sup>2,3</sup> there is scant literature to guide the implementation of psychiatry and mental health services within these types of alternate care sites.

A mental health team, consisting of social workers and psychiatrists, was developed to provide a positive social environment, treat psychiatric exacerbations, and assist to prevent negative outcomes such as suicide and overdose at a field hospital in Boston.<sup>4</sup> However, details about this program are not available. At alternate care sites known as Fangcang shelters in China during the COVID-19 pandemic health care workers at these shelters provided emotional support to promote wellness and reduce anxiety associated with the COVID-19 diagnosis and isolation.<sup>5</sup>

The purpose of this manuscript is to describe the development, implementation and experience of an innovative psychiatry-mental health service established within a COVID-19 field hospital in Baltimore, MD. To our knowledge, ours is the first study describing provision of psychiatric services in a COVID-19 field hospital setting.

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## Methods

**Study Design:** This is a single-center descriptive study about the development, implementation, and experience providing psychiatry and mental health services at a field hospital. The term ‘psychiatry’ refers to the evaluation and management of psychiatric disorders, whereas the term ‘mental health services’ refers to supportive services aimed at promoting wellness.

**Setting:** Baltimore Convention Center Field Hospital (BCCFH) served as the setting for this study. As part of Maryland’s COVID-19 pandemic response plan, the BCCFH was opened in April 2020 to provide acute care services to adults with COVID-19. The 252-bed hospital operated under a partnership between 2 major academic health systems in Baltimore (the University of Maryland Medical System and Johns Hopkins Medicine) and the Maryland Department of Health. The BCCFH “hot zone” clinical area was constructed in a 132 000 square-foot exhibit hall of the convention center, with shared restrooms and lounge areas and individual cubicles separated by privacy curtains and temporary prefab walls. There were no windows or skylights, so night and day cycles were simulated with dimming of lights in the evening. No outside visitors were permitted, but there was Wi-Fi and devices were made available for communicating with friends and family. The hot zone also served as an open collaborative workspace, unseparated by walls or barriers, for all clinical staff.

**Time period:** The inpatient service at BCCFH operated between April 2020 and June 2021.

**Population:** The field hospital admitted 1495 patients receiving transfers of lower acuity COVID-19 positive patients from area emergency departments and inpatient settings. Admission to BCCFH was voluntary and also was offered to some patients for social reasons who would otherwise not meet criteria for inpatient hospitalization under pre-pandemic guidelines. Patients with psychiatric and substance use disorders and those experiencing homelessness or unstable housing faced significant barriers to isolate and care for themselves even if medically stable, and thus represented a significant proportion of patients admitted to the field hospital.

**Funding:** BCCFH was a state sponsored operation. There was no expectation of significant revenue being generated by the BCCFH, and the majority of funding was provided by Maryland state government. No out-of-pocket costs or copays were billed to patients. Commercial and public insurance were billed for hospital services if already in place prior to admission.

**Description and analysis:** BCCFH leadership team and key stakeholders (e.g., social work and nursing leadership) contributed their knowledge about the development and implementation of psychiatry-mental health services through unstructured interviews or authorship. Key strategies included the suicide prevention program and psychiatry nurse practitioner (psych NP) program. Although the field hospital was opened in 2020, the psych NP service was not initiated until January of 2021 and was operational until May 2021. Operational reports from the EMR for 503 patients over this time period were utilized to present the BCCFH experience. Demographic data, suicide risk assessment scores and subsequent actions, number of psych NP encounters, diagnoses, medication management, and discharge outcomes were reported.

The Johns Hopkins University Institutional Review Board (IRB) approved this study. A waiver of informed consent was obtained.

## Results

### *Suicide Prevention Program Development*

The initial need to quickly stand up the BCCFH in a warehouse-like space created potential safety challenges. Mitigation of ligature risks was not an area of emphasis in the design of the clinical space, and the communal environment of the Convention Center did not allow for seclusion rooms or use of physical restraints. Non-clinical security staff were present on the unit for support but were not trained in de-escalation or physical restraint practices. BCCFH leadership recognized the need to reduce the risk of suicide or self-harm behavior in this inherently challenging environment.

Adapting from University of Maryland Medical Center (UMMC) care process, BCCFH used the Columbia Suicide Severity Rating Scale (C-SSRS) to conduct an admitting nurse-performed, EMR-embedded universal screening of all patients admitted to the field hospital.<sup>6</sup> The C-SSRS uses simple yes/no questions to produce a suicide risk score of high, moderate, low, or no definitive risk. All patients who scored moderate or high risk for suicide were then further evaluated by a trained social worker (SW) who provided an evidence-based suicide assessment using the Suicide Assessment Five-Step Evaluation and Triage (SAFE-T) to further evaluate the patient’s risk and determine a safety plan as appropriate (Figure 1). The BCCFH team was fortunate to have a social work team that chose to stay in the hot zone during the workday and interact face to face with the patients. A team member, typically a nursing assistant, provided direct 1:1 observation for the high suicide risk patients until they could be rapidly assessed by the SW within hours. No prolonged use of sitters for self-harm prevention was permitted since the physical environment could not be modified to meet acceptable care standards. If the SW assessment confirmed that the patient was at high risk for suicide, the patient was transferred back to the sending facility or emergency department. If a patient scored as moderate risk with SAFE-T, SW completed a safety plan, and a copy was given to the nurse and patient. Patients at low risk were followed by the clinical team to ensure their mental health needs were met while in the BCCFH and upon discharge and were not automatically evaluated by the SW unless the clinical team requested that specific mental health resources be provided.

The suicide screening process differed from other major institutions in that all patients who screened as moderate or high risk for suicide were further assessed by SW (Table 1). Suicide risk level was included as part of the standardized handoff among SW staff to ensure continued follow up. In addition, consistently utilizing the 1:1 sitter at the bedside until patients could be further assessed or acute care transfer could be arranged was a key strategy to mitigate harm for a high suicide risk patient.

### *Psychiatry NP Service Development*

The BCCFH utilized nurse practitioners (NPs) who were dually-certified in both psychiatric-mental health (PMHNP) and family medicine. The American Nurses Credentialing Center (ANCC) provides oversight of the PMHNP credential, validating the NPs specialty expertise. The NPs had previously provided direct medical care at BCCFH and proposed the service based on needs perceived by multiple team members. The program was launched on January 7, 2021. Cross disciplinary medical training prepared the psychiatry team to safely provide care within a dedicated COVID-19 unit. Familiarity with COVID-19 prevention and treatment regimens—all of which continued to change rapidly as the pandemic evolved—allowed the NPs to anticipate the impact of medical illness on the

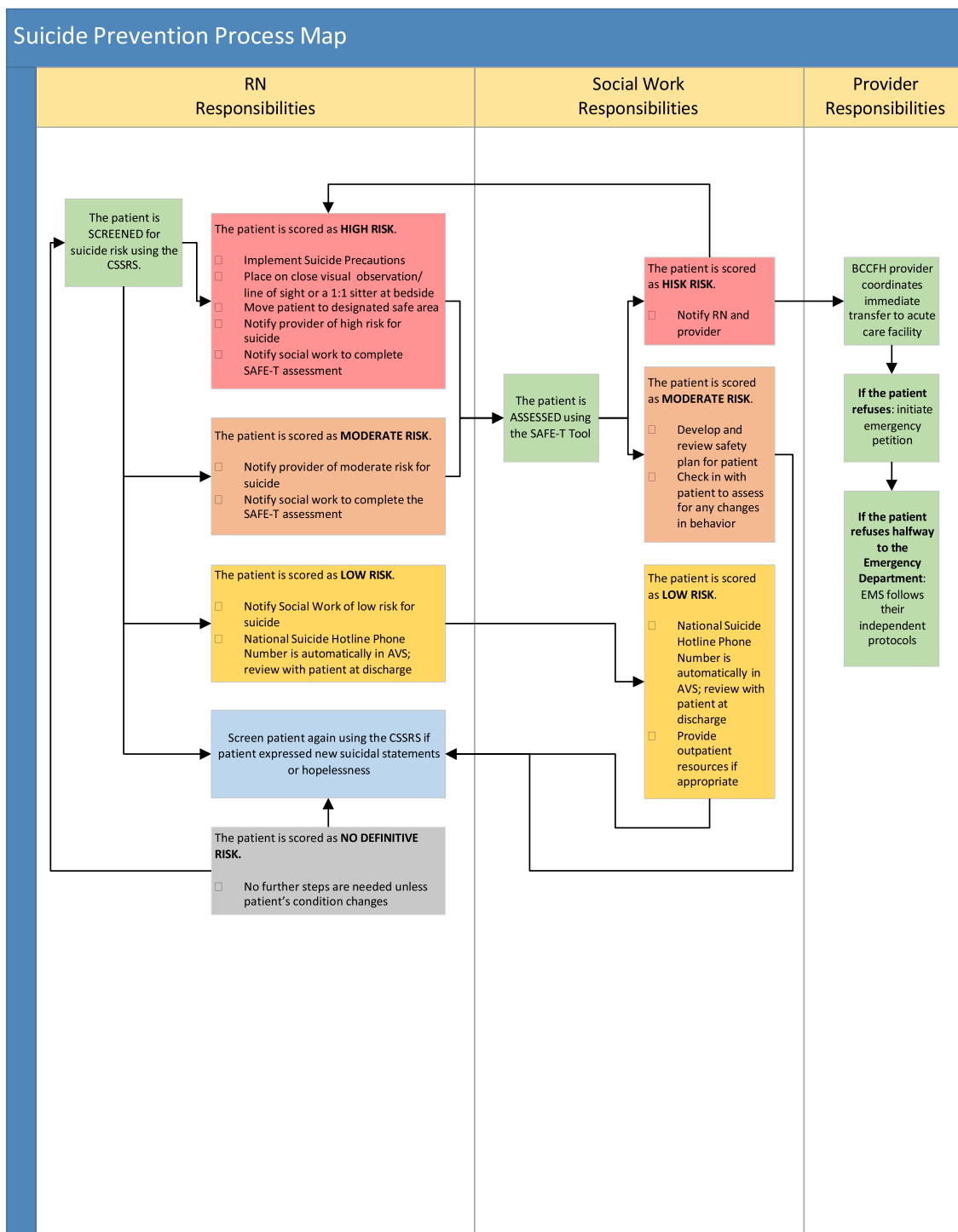


Figure 1. BCCFH suicide prevention process map.

mental health needs of the patients. In addition, the NPs’ medical training provided an added layer of safety in medical care through comprehensive assessment of complex patients with multiple medical and psychiatric comorbidities by an additional skilled provider in a field hospital staffed by part-time contingency providers. The primary goals of the psychiatry service were to treat identified psychiatric disorders, reduce emotional distress, and improve functioning.

Given the limited availability of NP psychiatry providers (2 days per week), only patients prioritized by the care team were evaluated.

The service utilized elements of a proactive model for involving psychiatric services based on review of admission notes and medication lists, as well as a traditional on-request consultation service. Criteria for evaluation by the psychiatry team included: pre-existing psychiatric diagnosis and/or current psychiatric medication, new mental health concern, or LOS > 5 days. LOS > 5 days was included because patients with longer lengths of stay more often complained of anxiety and demoralization. Diagnoses and presentations with higher risk profiles such as psychosis were also prioritized for evaluation. Of note, substance use disorders, specifically opioid

**Table 1.** BCCFH suicide prevention interventions

Suicide Risk Stratification	BCCFH Interventions Required
RN Suicide Screen using the C-SSRS on Admission?	Yes
High Risk Interventions put into place while waiting for the SW SAFE T assessment is completed	<ol style="list-style-type: none"> <li>1. Suicide precautions</li> <li>2. Place on close visual observation/line of sight or a 1:1 sitter at bedside (RN/T2)</li> <li>3. Notify provider of suicide risk</li> <li>4. Consult SW for SAFE T Assessment</li> <li>5. Move to designated safe area</li> </ol>
Moderate Risk Interventions put into place while waiting for the SW SAFE T assessment is completed	<ol style="list-style-type: none"> <li>1. Notify provider of suicide risk</li> <li>2. Consult SW for SAFE T Assessment</li> </ol>
Low Risk Interventions	<ol style="list-style-type: none"> <li>1. Notify social work staff of low risk for suicide</li> </ol>
If screened as high or moderate, who completes the SI assessment (SAFE-T)?	Social Work
Interventions if stratified as High Risk for Suicide on SAFE T	<ol style="list-style-type: none"> <li>1. SW will notify the RN and BCCFH provider of the results.</li> <li>2. Place patient on a 1:1 sitter at bedside until patient is transferred (RN/T2) a. Patients on one-to-one observation are monitored continuously, including in the bathroom</li> <li>3. BCCFH provider shall coordinate immediate transfer to acute care facility. <ol style="list-style-type: none"> <li>a. If the patient refuses: initiate emergency petition</li> <li>b. If the patient refuses half-way to the Emergency Department: EMS follows their independent protocols</li> </ol> </li> </ol>
Interventions if stratified Moderate Risk for Suicide on SAFE T	<ol style="list-style-type: none"> <li>1. Notify provider</li> <li>2. SW will complete a safety plan with the patient</li> <li>3. RN will review the safety plan with patient every shift and remind patient to notify RN if triggered</li> <li>4. The SW team (in addition to nursing) will also check in with the patient at least once a day to re-evaluate/assess and document any changes in mood/affect/behavior</li> </ol>
Interventions if stratified Low Risk for Suicide on SAFE T	SW will provide resources if appropriate
For all suicide risk patients, Low/Moderate/High Risk for Suicide	The National Suicide Hotline number will be given and reviewed with the patient at discharge in the AVS for patient.

use disorder and alcohol use disorder, were treated by the primary medical team at BCCFH, and not the psychiatry service. The treatment of opioid use disorder at BCCFH is described elsewhere.<sup>7</sup> During the daily rounds meeting, social work, nursing, and medical providers identified patients meeting the team's criteria for psychiatric evaluation. Prior to being seen by the NP, the social work team collected standardized information from each patient which included any mental health diagnoses and current outpatient providers. NPs reviewed previous records, contacted outpatient providers or family for collateral information or care coordination,

interviewed patients and communicated their assessment and plan both verbally and via EMR document and handoff reports. A care plan was developed in coordination with a clinical pharmacist since on-site formulary was limited and planning was required to obtain non-formulary medications such as long-acting injectable anti-psychotic medications. Recommendations for discharge planning, such as referrals to outpatient psychiatry, were communicated to the social work team. Some patients were seen for a follow up evaluation, especially following medication changes or in higher acuity situations. Most patients were provided with brief supportive therapy and/or psychoeducation focused on behavioral interventions to reduce stress and anxiety and promote sleep. A limited number of mindfulness tools were donated by the psychiatry NPs including noise canceling ear buds and mandala coloring books for adults.

The NP psychiatry team created a weekly support group open to all patients within the field hospital as part of the effort to provide proactive care to all patients regardless of diagnosis. The group was structured to provide psychoeducation relevant to the population and introduce a skill that each patient could then practice individually. Group content was drawn from the NP's previous experience facilitating dialectical behavior therapy (DBT) and mindfulness groups for a similar high-risk population, as well as experience interacting with COVID-19 patients in a medical capacity. For example, one group session reviewed psychoeducation regarding anxiety, and then the facilitator guided participants through progressive muscle relaxation. Each group session lasted approximately 45 minutes and consisted of 5-7 participants and occurred either weekly or bi-weekly depending on volume of urgent individual consults in the unit. Patients were invited individually by the psychiatry NPs, and attendance was coordinated with nursing staff.

### Experience

From January to May 2021, a total of 503 patients admitted to the BCCFH were screened using the C-SSRS to assess suicide risk. Of those screened, chart review data was only available for those patients who screened as "moderate" or "high" risk for suicide (as prompted for inclusion in operational reports used for tracking of risk and interventions). 16 patients scored either moderate or high risk for suicide by nursing assessment, prompting further evaluation by the social work team utilizing the SAFE-T assessment. Upon SW assessment, only 1 of these patients remained at high risk for suicide and was transported to the ED for further evaluation. The patient was evaluated by psychiatry staff within the Emergency Department. Of the remaining 15 patients referred to SW for SAFE-T assessment, 7 were scored as moderate risk and 8 scored low risk. Safety plans were documented and shared with the patient and multidisciplinary team in all but 1 of the moderate risk cases.

From January to May 2021, the NP psychiatry team evaluated and provided recommendations for over 70 individual patients based on personal record keeping in the EMR (patient list in Epic) of KR. However, chart review data was available for only 47 of the 70 encounters because the automated operational reports generated by the EMR did not capture all of the NP encounters due to discrepancies in note labeling. The demographics of the psychiatric group were similar to the non-psych evaluated population. Among the psychiatric NP evaluated patients, the majority were black or African American, comprising 64% (95% CI: 49%-77%), while in the non-psych NP evaluated population, the proportion of African Americans was 55% (95% CI: 50%-60%) ( $P$  value = 0.184). The comparison was assessed using a chi-square test with a significance level of 0.05. Similarly, in terms of gender, 60% (95% CI: 44%-73%)

of the psychiatric group were male, compared to 59% (95% CI: 54%-63%) of the non-psych group ( $P$  value = 0.886). The comparison was also assessed using a chi-square test with a significance level of 0.05.

The psychiatric group exhibited a relatively younger age profile when compared to the general population at the BCCFH. The average age of the psychiatric group was 44 years old (95% CI: 42.6 to 45.4), whereas the average age for the non-psych population was 54 years old (95% CI: 53.6-54.4) ( $P < 0.0001$ ).

Of the 47 encounters for which data is available, 32% of the psychiatry group patients were seen by the psych NP team on more than 1 occasion during their stay at BCCFH. The most common diagnoses were psychotic spectrum disorders, including schizophrenia, schizoaffective disorder, and unspecified psychosis ( $n = 13$ , 27%). Other prevalent diagnoses seen by the psychiatry team included bipolar and unspecified mood disorders ( $n = 9$ , 19%), trauma/stressor related disorders (including PTSD; ( $n = 9$ , 19%), and depressive disorders ( $n = 8$ , 17%). 45% of the patients evaluated by the psychiatry team had psychotropic medications initiated, changed, or titrated during their stay at BCCFH (45%,  $n = 21$ ). An additional 36% of patients ( $n = 17$ ) had their psychotropic medications reconciled and doses maintained by the psych NP team; thus, the psych NP team was involved in medication management of approximately 80% of consults. 25% of the pharmacologic interventions initiated by the psych NP team involved adding or titrating doses of antipsychotics, and antidepressants, mood stabilizers, and anxiolytics were also managed by the psych NP consultants. Examples of specialty medication interventions include re-timing the administration of aripiprazole to reduce akathisia, monitoring of valproic acid levels, discontinuation of bupropion in a patient with increased seizure risk, and identification of contraindications to psychotropic medications such as prolonged QT interval.

The majority of patients seen by the NP psychiatry team were discharged home (55%, 95%CI 40%-70%), a similar proportion to the non-psych evaluated population (65%, 95% CI 60%-69%) ( $P = 0.1732$ ). 13% of the patients from the psych evaluated group were transferred to an acute care facility for consideration of a higher level of care; half of the transfers were initiated due to escalating or unstable psychiatric symptoms and the remaining half were due to medical decompensation.

Based on the personal record keeping of KR, more than 30 patients attended NP-led support groups over the 5-month period. Based on data captured by automated operational reports, chart review data are available for 19 of these patient encounters which spanned a total of 4 group sessions. An average of 5 patients attended each group session. Patient participation level was categorized as "active" in nearly all of the encounters. Anecdotally, several participants verbally expressed that the skills taught would be utilized throughout the duration of their hospitalization as well as after discharge. Multiple colleagues, especially bedside nursing staff, provided positive feedback regarding the group sessions and worked to actively assist patients to attend by providing wheelchair transport and education regarding portable oxygen therapy.

During active operations of the BCCFH, there were no physical assaults on staff, no self-harm incidents, and no suicides.

### Limitations

Recognition and treatment of psychiatric disorders was not at the forefront of the COVID-19 response worldwide, and implementation of psychiatric and mental health interventions at the BCCFH described

herein was delayed. The field hospital opened in April 2020, and suicide risk assessment was not implemented until later that year, and psychiatric consultation services not implemented until January 2021. Psychiatric provider availability is limited in many venues due to well documented psychiatrist shortages, and this was certainly the case at the BCCFH as there were only 2 part-time psych NPs on staff with insufficient capacity to meet demand for consultations.

Data describing time to first contact with the psych NP service as well as length of stay (LOS) was not available for this study, but may be useful to further categorize the impact of the service on overall patient outcomes. Furthermore, future study should focus on outcomes of BCCFH patients pre and post implementation of the psych NP service. Some research suggests that involvement of proactive psychiatric services may lend to favorable outcomes such as higher rates of discharge home and reduced LOS.<sup>8</sup>

Our study was based in a single urban center in a developed nation, possibly constraining the generalizability of these findings to settings with disparate mental health disease prevalence. Also, the portrayal of our program is tethered to the COVID-19 pandemic. It's conceivable that future disasters, both infectious and non-infectious, may present different dynamics. Nevertheless, gleaned insights from our experiences should be useful, as they help prepare for the potentially ongoing burden of chronic mental illnesses, including their acute exacerbations, in future scenarios.

### Discussion

In this single-center descriptive study of program development from a field hospital, we demonstrate that a multi-disciplinary approach utilizing psychiatry nurse practitioners, social workers and nurses to address psychiatric and mental health issues is feasible and desirable, even in a crisis care setting where the focus is to keep patients alive in an overwhelmed health system. The COVID-19 pandemic disproportionately impacted patients with unstable housing, limited financial resources, mental health problems, and substance use.<sup>7</sup> Those patients were well-served in our low acuity convention center-based field hospital, especially at a time when Emergency Departments and inpatient units had limited capacity and very few inpatient psychiatric units were configured to care for patients with COVID-19. Our experience highlights the utility of anticipating and planning for psychiatric/mental health care in a disaster setting in order to increase patient safety, maximize use of lower level of care environments, and to relieve suffering. Incorporating these into existing processes like multi-disciplinary rounds, EMR, and handoff reports, and utilizing the unique expertise of the staff who volunteered to work at BCCFH helped materialize this effort. Although only 50% of the patients identified by the nursing suicide screen as moderate to high risk were recognized to be indeed moderate to high risk by subsequent social work assessment, this process allowed a systematic method for universal screening and allowed SW to focus their limited resources. Only a small minority needed to be sent a higher level of care, and the protocol was successfully operationalized in these rare instances. Although only 9% of the patients admitted during the time the service was active were seen by the psych NP, this may be more reflective of the smaller footprint of the service rather than needs. Importantly, around half the patients seen required adjustment of psychotropic medications, a quarter of which were antipsychotics, and a third needed to be seen again. These changes may not have been apparent or may have been outside the comfort zone of the part-time field hospital general medical providers. Optimized medications would be expected to result in improved mental health during the hospital

stay and post-discharge. Although only a small number of group therapy sessions were possible with the available resources, they were popular with the patients and staff. Use of referral criteria as well as NP surveillance and involvement in non-consult cases through group therapy allowed the service to provide benefits institution wide. Similar to the PHIPPS model at Johns Hopkins,<sup>8</sup> it is likely that this model improved the identification of patients in need of psychiatric care. In addition, patients with uncomplicated substance use disorders were managed by other providers within the BCCFH, which is also the case at many acute care hospitals which utilize care teams beyond psychiatric specialists to address substance use disorders. Having access to physicians on staff with expertise and board certification in addictions medicine allowed the psych NP service to prioritize other psychiatric issues which otherwise may not have been addressed.

Utilizing the admitting nurse to administer a protocolized, EMR-based suicide risk assessment tool aligns this activity with a core nursing function of promoting access to mental health and is consistent with American Hospital Association (AHA) advocated strategy to use EMR to prompt mental health assessment and share care plans.<sup>9,10</sup> Additional unique aspects of staffing and workspace likely led to successful development and implementation of the program. The open coworking spaces promoted collaboration and regular communication between team members. A sense of mission likely attracted motivated staff that took initiative and ownership of the programs. Anecdotally, many traditional hospital social workers worked remotely during the pandemic, while those at BCCFH themselves believed that they needed to be in the clinical area. Dually certified NPs who volunteered to provide direct medical care perceived the need for a separate psychiatric/mental health service, advocated for the program and led its development. In contrast to consult services at other large academic institutions, the BCCFH did not utilize an attending psychiatrist in any capacity. Physicians have expressed concerns that advanced practice providers may not have the requisite training and expertise to provide safe consultation-liaison psychiatric care.<sup>11</sup> Our study highlights the use of dually-certified nurse practitioners in this role. These practitioners have both medical and psychiatric specialty education, alleviating some of the concern regarding lack of training supporting their consultation-liaison role. Their competencies in infection control guidelines, care of patients with multiple co-morbidities, complex medication management, care coordination with outpatient providers, and transition of care were key to a successful co-management model of care. In addition, provision of proactive psychiatric-mental health services appears to be uniquely suited to the nurse practitioner role, in that NPs are well trained in prevention and wellness in addition to evaluation and management of diagnosable illnesses. Indeed, the NP's ability to offer psychotherapy such as the group therapy sessions at BCCFH, is increasingly being recognized as integral to the role of the advanced practice provider,<sup>12</sup> and also illustrates the unique value of the NP. The relative lack of safety events including suicide, as well as limited numbers of transfers to acute care, indicate that the NP led service was able to provide safety net services at a high level within the BCCFH venue.

## Conclusions

The COVID-19 pandemic prompted unusual innovation and resource allocation; however, we believe this model of care integration will be useful in other public health emergencies where contingency care for large numbers of at-risk patients is put in place.

Planning for future pandemic and disaster response should include the systems and teams needed to provide psychiatric and mental health care in field hospitals. Integrated teams with a strong nursing and social work backbone and mental health focus are likely to play a key role in future pandemics, wars, or natural disasters where persons find themselves in acute physical and mental distress.

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**Competing Interests.** The authors have no competing interests to disclose.

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**Highlights.** —Universal suicide risk assessment and recognition of unstable psychiatric conditions with protocols for transfer to a higher level of care were key elements in demonstrating the feasibility of caring for a high acuity population within a COVID-19 field hospital.

—Dually-certified nurse practitioners facilitated a high level of integrated medical and psychiatric health care at BCCFH.

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